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(54) **INSERTION INSTRUMENT FOR ANCHOR ASSEMBLY**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

233,475 A 10/1880 Cook et al.
261,501 A 7/1882 Vanermark
(Continued)

FOREIGN PATENT DOCUMENTS

CN 101056587 10/2007
DE 4207854 9/1993
(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 60/113,548, filed Dec. 23, 1998, Schwartz.
(Continued)

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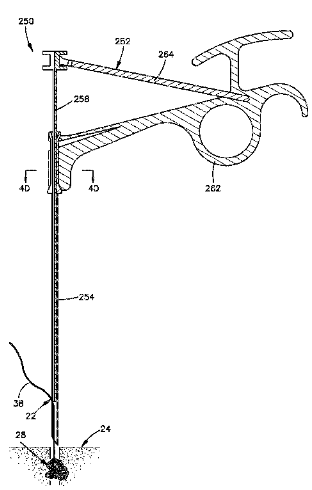
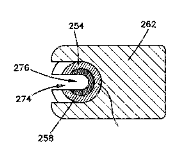
(57) **ABSTRACT**

An insertion instrument is configured to eject a pair of anchor bodies across an anatomical gap so as to approximate the gap. The insertion instrument can include a single cannula that retains the pair of anchor bodies in a stacked relationship, or a pair of adjacent cannulas that each retain respective anchor bodies. The insertion instrument can be actuated so as to eject the anchor bodies into respective target anatomical locations.

88 Claims, 83 Drawing Sheets





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(56) **References Cited**

U.S. PATENT DOCUMENTS

330,087 A 11/1885 Binns
400,743 A 4/1889 Brown
2,490,364 A 12/1949 Livingston
3,580,256 A 5/1971 Wilkinson
3,867,728 A 2/1975 Stubstad et al.
3,908,677 A 9/1975 Beach
3,987,806 A 10/1976 Gilbert
4,006,747 A 2/1977 Kronenthal et al.
4,235,238 A * 11/1980 Ogiu et al. 606/145
4,669,473 A 6/1987 Richards et al.
4,741,330 A 5/1988 Hayhurst
4,778,990 A 10/1988 Laughlin
4,994,028 A 2/1991 Leonard et al.
5,021,059 A 6/1991 Kensey et al.
5,041,129 A 8/1991 Hayhurst et al.
5,053,046 A 10/1991 Janese
5,062,344 A 11/1991 Gerker
5,120,596 A 6/1992 Yamada
5,156,616 A 10/1992 Meadows et al.
5,269,809 A 12/1993 Hayhurst et al.
5,281,238 A 1/1994 Chin et al.
5,403,348 A 4/1995 Bonutti
5,417,691 A 5/1995 Hayhurst
5,464,426 A 11/1995 Bonutti
5,478,353 A 12/1995 Yoon
5,507,754 A * 4/1996 Green et al. 606/139
5,522,846 A 6/1996 Bonutti
5,527,343 A 6/1996 Bonutti
5,540,703 A 7/1996 Barker et al.
5,549,630 A 8/1996 Bonutti
5,562,684 A 10/1996 Kammerer
5,562,736 A 10/1996 Ray et al.
5,571,189 A 11/1996 Kuslich
5,584,862 A 12/1996 Bonutti
5,601,557 A 2/1997 Hayhurst
5,626,614 A 5/1997 Hart
5,628,756 A 5/1997 Barker, Jr. et al.
5,643,319 A 7/1997 Green et al.
5,649,945 A 7/1997 Ray et al.
5,699,657 A 12/1997 Paulson
5,702,462 A 12/1997 Oberlander
5,728,109 A 3/1998 Schulze et al.
5,733,306 A 3/1998 Bonutti
5,824,093 A 10/1998 Ray et al.
5,906,626 A 5/1999 Carrillo
5,941,900 A 8/1999 Bonutti
5,944,739 A 8/1999 Zlock et al.
5,951,590 A 9/1999 Goldfarb
5,957,953 A 9/1999 DiPoto et al.
5,970,697 A 10/1999 Jacobs et al.
5,989,252 A 11/1999 Fumex
6,056,773 A 5/2000 Bonutti
6,068,648 A 5/2000 Cole
6,077,292 A 6/2000 Bonutti
6,110,183 A * 8/2000 Cope 606/139
6,113,611 A 9/2000 Allen et al.
6,146,422 A 11/2000 Lawson
6,179,860 B1 1/2001 Fulton et al.
6,187,048 B1 2/2001 Milner et al.
6,209,550 B1 4/2001 Powell
6,224,630 B1 5/2001 Bao et al.
6,245,107 B1 6/2001 Ferree
6,287,325 B1 9/2001 Bonutti
6,296,659 B1 10/2001 Foerster
6,306,159 B1 10/2001 Schwartz et al.
6,325,816 B1 12/2001 Fulton et al.
6,409,742 B1 6/2002 Fulton et al.
6,432,123 B2 8/2002 Schwartz et al.
6,482,235 B1 11/2002 Lambrecht et al.
6,508,839 B1 1/2003 Lambrecht et al.
6,511,498 B1 1/2003 Fumex
6,530,933 B1 3/2003 Yeung et al.
6,579,291 B1 6/2003 Keith et al.
6,592,625 B2 7/2003 Cauthen
6,656,182 B1 12/2003 Hayhurst
6,689,125 B1 2/2004 Keith et al.
6,719,797 B1 4/2004 Ferree
6,758,855 B2 7/2004 Fulton et al.
6,964,674 B1 11/2005 Matsuura et al.
6,972,027 B2 12/2005 Fallin et al.
6,984,247 B2 1/2006 Cauthen
6,986,775 B2 1/2006 Morales et al.
6,991,643 B2 1/2006 Saadat
6,997,956 B2 2/2006 Cauthen
7,004,970 B2 2/2006 Cauthen, III et al.
7,033,393 B2 4/2006 Gainor et al.
7,033,395 B2 4/2006 Cauthen
7,041,052 B2 5/2006 Saadat et al.
7,048,754 B2 5/2006 Martin et al.
7,052,516 B2 5/2006 Cauthen et al.
7,128,708 B2 10/2006 Saadat et al.
7,153,312 B1 12/2006 Torrie et al.
7,189,235 B2 3/2007 Cauthen
7,285,124 B2 10/2007 Foerster
7,303,575 B2 12/2007 Ogle
7,326,221 B2 * 2/2008 Sakamoto A61B 17/0469
606/139
7,329,279 B2 2/2008 Haug et al.
7,335,221 B2 2/2008 Collier et al.
7,347,863 B2 3/2008 Rothe et al.
7,390,332 B2 6/2008 Selvitelli et al.
7,468,074 B2 12/2008 Caborn et al.
7,491,212 B2 2/2009 Sikora et al.
7,494,496 B2 2/2009 Swain et al.
7,601,165 B2 10/2009 Stone
7,615,076 B2 11/2009 Cauthen, III et al.
7,621,925 B2 11/2009 Saadat et al.
7,651,509 B2 1/2010 Bojarski et al.
7,658,750 B2 2/2010 Li
7,666,193 B2 2/2010 Starksen et al.
7,670,379 B2 3/2010 Cauthen
7,670,380 B2 3/2010 Cauthen, III
7,678,135 B2 3/2010 Maahs et al.
7,731,732 B2 6/2010 Ken
7,736,379 B2 6/2010 Ewers et al.
7,749,250 B2 7/2010 Stone et al.
7,749,273 B2 7/2010 Cauthen, III et al.
7,753,941 B2 7/2010 Keith et al.
7,776,096 B2 8/2010 Cauthen
7,828,850 B2 11/2010 Cauthen, III et al.
7,846,208 B2 12/2010 Cauthen, III et al.
7,857,830 B2 12/2010 Stone et al.
7,905,904 B2 3/2011 Stone et al.
7,905,923 B2 3/2011 Keith et al.
7,909,851 B2 3/2011 Stone et al.
7,909,879 B2 3/2011 Cauthen
7,922,768 B2 4/2011 Cauthen, III et al.
7,935,147 B2 5/2011 Wales
7,951,201 B2 5/2011 Cauthen et al.
7,959,650 B2 6/2011 Kaiser et al.
7,963,992 B2 6/2011 Cauthen et al.
7,985,257 B2 7/2011 Cauthen et al.
7,993,405 B2 8/2011 Cauthen et al.

(56) **References Cited**

U.S. PATENT DOCUMENTS

8,034,112	B2	10/2011	Cauthen et al.	
8,048,160	B2	11/2011	Cauthen	
8,083,768	B2	12/2011	Ginn et al.	
8,088,130	B2	1/2012	Kaiser et al.	
8,088,165	B2	1/2012	Cauthen et al.	
8,100,914	B2	1/2012	Cauthen et al.	
8,118,836	B2	2/2012	Denham et al.	
8,128,640	B2	3/2012	Harris et al.	
8,128,658	B2	3/2012	Kaiser et al.	
8,128,698	B2	3/2012	Bentley et al.	
8,137,382	B2	3/2012	Denham et al.	
8,216,253	B2	7/2012	Saadat et al.	
8,216,260	B2	7/2012	Lam et al.	
8,298,291	B2 *	10/2012	Ewers et al.	623/23.72
8,814,903	B2	8/2014	Sengun et al.	
8,828,053	B2	9/2014	DeMatteo et al.	
8,920,436	B2	12/2014	Lam et al.	
8,926,634	B2	1/2015	Rothe et al.	
2002/0029782	A1	3/2002	Linderoth	
2002/0065536	A1	5/2002	Hart et al.	
2002/0115999	A1	8/2002	McDevitt et al.	
2002/0143359	A1	10/2002	Fulton et al.	
2002/0188301	A1	12/2002	Dallara et al.	
2003/0167071	A1	9/2003	Martin et al.	
2004/0097980	A1	5/2004	Ferree	
2004/0153074	A1	8/2004	Bojarski et al.	
2004/0162618	A1	8/2004	Mujwid et al.	
2004/0225183	A1 *	11/2004	Michlitsch et al.	600/106
2004/0243171	A1	12/2004	Fulton et al.	
2005/0080422	A1	4/2005	Otte et al.	
2005/0228448	A1	10/2005	Li	
2005/0251157	A1	11/2005	Saadat et al.	
2005/0251159	A1	11/2005	Ewers et al.	
2005/0251177	A1	11/2005	Saadat et al.	
2005/0251202	A1	11/2005	Ewers et al.	
2005/0251205	A1	11/2005	Ewers et al.	
2005/0251206	A1	11/2005	Maahs et al.	
2005/0251207	A1	11/2005	Flores et al.	
2005/0251208	A1	11/2005	Elmer et al.	
2005/0251209	A1	11/2005	Saadat et al.	
2005/0251210	A1	11/2005	Westra et al.	
2005/0277966	A1	12/2005	Ewers et al.	
2005/0277981	A1	12/2005	Maahs et al.	
2005/0283192	A1	12/2005	Torrie et al.	
2005/0283246	A1	12/2005	Cauthen, III et al.	
2006/0064126	A1	3/2006	Fallin et al.	
2006/0178680	A1	8/2006	Nelson et al.	
2006/0190042	A1	8/2006	Stone et al.	
2006/0259076	A1	11/2006	Burkhart et al.	
2006/0265008	A1	11/2006	Maruyama et al.	
2007/0010857	A1 *	1/2007	Sugimoto et al.	606/232
2007/0027476	A1	2/2007	Harris et al.	
2007/0073320	A1	3/2007	Mikkaichi et al.	
2007/0083236	A1	4/2007	Sikora et al.	
2007/0100348	A1	5/2007	Cauthen, III et al.	
2007/0129804	A1	6/2007	Bentley et al.	
2007/0142846	A1	6/2007	Catanese	
2007/0156245	A1	7/2007	Cauthen, III et al.	
2007/0162054	A1	7/2007	Horaguchi	
2007/0162120	A1	7/2007	Bouffier	
2007/0185532	A1 *	8/2007	Stone et al.	606/232
2007/0255285	A1	11/2007	Trieu	
2007/0276433	A1	11/2007	Huss	
2008/0009888	A1	1/2008	Ewers et al.	
2008/0015635	A1	1/2008	Olsen et al.	
2008/0015636	A1	1/2008	Olsen et al.	
2008/0033487	A1	2/2008	Schwartz et al.	
2008/0086155	A1	4/2008	Rothe et al.	
2008/0097484	A1	4/2008	Lim et al.	
2008/0097522	A1	4/2008	Chopra	
2008/0140092	A1	6/2008	Stone et al.	
2008/0140093	A1	6/2008	Stone et al.	
2008/0147086	A1	6/2008	Pfister et al.	
2008/0147102	A1	6/2008	Rotella et al.	
2008/0167658	A1	7/2008	Kerr et al.	
2008/0177302	A1	7/2008	Shumas	
2008/0177304	A1	7/2008	Westra et al.	
2008/0188893	A1	8/2008	Selvitelli et al.	
2008/0195145	A1	8/2008	Bonutti et al.	
2008/0200930	A1	8/2008	Saadat et al.	
2008/0208225	A1	8/2008	Seibold et al.	
2008/0208226	A1	8/2008	Seibold et al.	
2008/0228198	A1	9/2008	Traynor et al.	
2008/0228265	A1	9/2008	Spence et al.	
2008/0228266	A1	9/2008	McNamara et al.	
2008/0228267	A1	9/2008	Spence et al.	
2008/0243151	A1	10/2008	Binmoeller et al.	
2008/0269781	A1	10/2008	Funamura et al.	
2008/0281355	A1	11/2008	Mayer et al.	
2008/0312689	A1	12/2008	Denham et al.	
2008/0319524	A1	12/2008	Yachia et al.	
2009/0018561	A1	1/2009	Schwartz et al.	
2009/0030522	A1	1/2009	Cauthen, III et al.	
2009/0036937	A1	2/2009	Cauthen, III et al.	
2009/0036989	A1	2/2009	Cauthen, III et al.	
2009/0036990	A1	2/2009	Cauthen, III et al.	
2009/0062846	A1	3/2009	Ken	
2009/0062847	A1	3/2009	Ken	
2009/0062848	A1 *	3/2009	Ken	606/213
2009/0062850	A1	3/2009	Ken	
2009/0062854	A1	3/2009	Kaiser et al.	
2009/0069823	A1	3/2009	Foerster et al.	
2009/0076547	A1	3/2009	Sugimoto et al.	
2009/0082805	A1	3/2009	Kaiser et al.	
2009/0157184	A1	6/2009	Cauthen, III et al.	
2009/0228042	A1	9/2009	Koogle et al.	
2009/0259260	A1	10/2009	Bentley et al.	
2009/0306711	A1	12/2009	Stone et al.	
2010/0049212	A1	2/2010	Caborn et al.	
2010/0069923	A1	3/2010	Nguyen et al.	
2010/0094337	A1	4/2010	Maiorino	
2010/0094425	A1	4/2010	Bentley et al.	
2010/0121376	A1	5/2010	Li	
2010/0292731	A1	11/2010	Gittings et al.	
2011/0022083	A1 *	1/2011	DiMatteo et al.	606/228
2011/0022084	A1	1/2011	Sengun et al.	
2011/0077667	A1	3/2011	Singhatat et al.	
2011/0082472	A1	4/2011	Harris et al.	
2011/0172701	A1	7/2011	Wales et al.	
2011/0270278	A1	11/2011	Overes et al.	
2012/0004669	A1	1/2012	Overes et al.	
2012/0035654	A1	2/2012	Belson	
2012/0046693	A1	2/2012	Denham et al.	
2012/0053630	A1	3/2012	Denham et al.	
2012/0109156	A1	5/2012	Overes et al.	
2012/0130422	A1	5/2012	Hootstein	
2012/0143215	A1	6/2012	Corrao et al.	
2012/0150223	A1	6/2012	Manos et al.	
2013/0110165	A1	5/2013	Burkhart et al.	
2014/0336703	A1	11/2014	Sengun et al.	
2015/0038992	A1	2/2015	DiMatteo et al.	

FOREIGN PATENT DOCUMENTS

EP	0834281	4/1998
EP	0838197	4/1998
EP	1938760	7/2008
EP	1964520	9/2008
EP	2238944	10/2010
EP	2663240	11/2013
EP	2663242	11/2013
WO	WO 92/11810	7/1992
WO	WO 99/22648	5/1999
WO	WO 03/096910	11/2003
WO	WO 2004/071307	8/2004
WO	WO 2005/011463	2/2005
WO	WO 2005/065553	7/2005
WO	WO 2006/039296	4/2006
WO	WO 2006/117398	11/2006
WO	WO 2007/005394	1/2007
WO	WO 2008/010738	1/2008
WO	WO 2008/048667	4/2008
WO	WO 2009/126781	10/2009
WO	WO 2009/146402	12/2009

(56) **References Cited**

FOREIGN PATENT DOCUMENTS

WO	WO 2010/088561	8/2010
WO	WO 2011/137159	11/2011
WO	WO 2012/006161	1/2012
WO	WO 2012/096706	7/2012
WO	WO 2012/096707	7/2012

OTHER PUBLICATIONS

U.S. Appl. No. 60/148,913, filed Aug. 13, 1999, Ferree.
U.S. Appl. No. 60/149,490, filed Aug. 18, 1999, Lambrecht.
U.S. Appl. No. 60/154,969, filed Sep. 20, 1999, Matsuura.
U.S. Appl. No. 60/161,085, filed Oct. 25, 1999, Lambrecht.
U.S. Appl. No. 09/453,120, filed Dec. 2, 1999, Torrie.
U.S. Appl. No. 60/263,343, filed Jan. 22, 2011, Keith.
Ahlgren et al., "Anular incision technique on the strength and multidirectional flexibility of the healing intervertebral disc," Spine, Apr. 15, 1994, 19(8), 948-954.
Ahlgren et al., "Effect of anular repair on the healing strength of the intervertebral disc: a sheep model," Spine, Sep. 1, 2000, 25(17), 2165-2170.
Arthrex, Inc., "Arthroscopic Meniscal Repair using the Meniscal Cinch: Surgical Technique," www.arthrex.com, © 2008, 6 pages.
Barrett et al., "T-Fix endoscopic meniscal repair: technique and approach to different types of tears," Arthroscopy: The Journal of Arthroscopic and Related Surgery, Apr. 1995, 11(2), 245-251.
Burg et al., "Modulation of Surface and Bulk Properties of Biomedical Polymers," Annals of the New York Academy of Sciences, Dec. 1997, 831, 217-222.
Caborn, D., "Meniscal Repair with the Fast T-Fix Suture System," Smith & Nephew Technique Plus Illustrated Guide, Mar. 2002, 10 pages.
Cauthen, J., "Annulotomy Study Table", Feb. 8, 1999, 1 page.
Cauthen, J., "Microsurgical Annular Reconstruction (Annuloplasty) Following Lumbar Microdiscectomy: A New Technique," Draft Abstract, Sep. 4, 1998, 4 pages.
Cauthen, J., "Microsurgical Annular Reconstruction (Annuloplasty) Following Lumbar Microdiscectomy: A New Technique," Abstract, AANS CNS Section on Disorders of the Spine and Peripheral Nerves Annual Meeting, 1999, 2 pages.
Cauthen,"Microsurgical Annular Reconstruction (Annuloplasty) Following Lumbar Microdiscectomy: Preliminary Report of a New Technique", CNS Boston Massachusetts, Spine & Peripheral Nerves Section (abstract only), http://abstracts.neurosurgeon.org/view.php?id=2790, accessed Oct. 6, 2010, 1999, 1 page.
Cobey, M., "Arthroplasties using compressed ivalon sponge ("intramedic sponge") long-term follow-up studies in 109 cases," Clinical Orthopaedics and Related Research, Sep.-Oct. 1967, 54, 139-144.
Coen et al., "An anatomic evaluation of T-Fix suture device placement for arthroscopic all-inside meniscal repair," Arthroscopy: The Journal of Arthroscopic and Related Surgery, Apr. 1999, 15(3), 275-280.
Dodge, Jr. et al., "Use of Polyvinyl Sponge in Neurosurgery," Journal of Neurosurgery, May 1954, 11(3), 258-261.
Edgerton et al., "Augmentation Mammaplasty: Psychiatric Implications and Surgical Indications," Plastic & Reconstructive Surgery, Apr. 1958, 21(4), 279-305.
Hampton et al., "Healing Potential of the Anulus Fibrosus," Spine, Apr. 1989, 14(4), 398-401.
International Patent Application No. PCT/US2011/034084: International Search Report and Written Opinion dated Jul. 1, 2011, 5 pages.
International Patent Application No. PCT/US2011/042384: International Search Report and Written Opinion dated Feb. 6, 2012, 26 pages.
International Patent Application No. PCT/US2011/058065: International Search Report and Written Opinion dated Apr. 5, 2012, 23 pages.
International Patent Application No. PCT/US2011/058071: International Search Report and Written Opinion dated Feb. 6, 2012, 14 pages.
Kambin et al., "Development of degenerative spondylosis of the lumbar spine after partial discectomy. Comparison of laminotomy, discectomy, and posterolateral discectomy," Spine, Mar. 1, 1995, 20(5), 599-607.
Kotilainen et al., "Microsurgical treatment of lumbar disc herniation: Follow-up of 237 patients," Acta Neurochirurgica, 1993, 120(3-4) 143-149.
Kroschwitz, J. I., "Concise Encyclopedia of Polymer Science and Engineering: Vinyl Alcohol Polymers," Wiley & Sons, 1990, 1233-1236.
Kusaka et al., "The Effect of Annulus Fibrosus Perforation on the Intradiscal Matrix Strain of the Axially Loaded Intervertebral Disc," Transactions of the 44 th Annual Meeting, Orthopaedic Research Society, Mar. 16-19, 1998, New Orleans, Louisiana, 23(1), p. 190-32 (Abstract).
Lehmann et al., "Refinements in technique for open lumbar discectomy," International Society for the Study of the Lumbar Spine, 1997, 2 pages.
Liu et al., "Morphologic Characterization of Polyvinyl Sponge (Ivalon) Breast Prosthesis," Archives of Pathol. & Lab. Medicine, Sep. 1996, 120(9), 876-878.
Malemud, C. J., "The Role of Growth Factors in Cartilage Metabolism," Rheum. Dis. Clin. North Am., Aug. 1993, 19(3), 569-580.
Ordway et al., "Failure Properties of a Hydrogel Nucleus in the Intervertebral Disc," North American Spine Society, Oct. 22-25, 1997, 168-169.
Osti et al., "1990 Volvo Award in Experimental Studies: Anulus Tears and Intervertebral Disc Degeneration: An Experimental Study Using an Animal Model," Spine, Aug. 1990, 15(8), 762-767.
Osti et al., "Annular Tears and Disc Degeneration in the Lumbar Spine. A post-mortem study of 135 discs," The Journal of Bone and Joint Surgery, Sep. 1992, 74(5), 678-682.
Panjabi et al., "Intrinsic Disc Pressure as a Measure of Integrity of the Lumbar Spine," Spine, Aug. 1988, 13(8), 913-917.
Peters et al., "Ivalon Breast Prostheses: Evaluation 19 Years after Implantation," Plastic and Reconstructive Surgery, Apr. 1981, 67(4), 514-518.
PR Newswire, "Smith & Nephew Launches Fast-Fix™ AB Meniscal Repair System," http://www.prnewswire.com/news-releases/smith--nephew-launches-fast-fixtm-ab-menis . . . , Accessed Aug. 23, 2010, 1 page.
Ray, C. D., "Prosthetic Disc Nucleus Implants: Update," North American Spine Society 13th Annual Meeting, 1999, 252-253.
Sgaglione et al., "All-Inside Meniscal Repair with the Ultra Fast-Fix™ Meniscal Repair System," Smith & Nephew Knee Series Technique Guide, Feb. 2008, 12 pages.
Silver et al., "Cartilage Wound Healing: An Overview," Otolaryngol. Clin. North Am., Oct. 1995, 28(5), 847-863.
Smith & Nephew Endoscopy, "Endoscopic Meniscal Repair Using the T-Fix™," Smith & Nephew, May 1996, 16 pages.
Smith & Nephew Endoscopy, "Fast-Fix Meniscal Repair System: Technique Information," http://endo.smith-nephew.com/no/node.asp?Nodeld=3045, Accessed Apr. 26, 2011, 3 pages.
Southwick et al., "Prosthetic Replacement of Chest-Wall Defects: An Experimental and Clinical Study", A. M. A. Archives of Surgery, 1956, 72, 901-907.
Unipoint Industries, Inc., "Polyvinyl Alcohol Foam for Surgical and Industrial Use: Data Sheets," Jul. 15, 1989, 6 pages.
Urbaniak et al., "Replacement of intervertebral discs in chimpanzees by silicone-dacron implants: a preliminary report," J. Biomed. Mater. Res. Symposium, May 1973, 7(4), 165-186.
Wageck et al., "Arthroscopic meniscal suture with the "double-loop technique"," Arthroscopy: The Journal of Arthroscopic and Related Surgery, Feb. 1997, 13(1), 120-123.
Yasargil, M. G., "Microsurgical Operation of Herniated Lumbar Disc," Advances in Neurosurgery, Lumbar Disc Adult Hydrocephalus, Springer-Verlag, 1977, 4(81), p. 81.
International Patent Application No. PCT/US05/34495: International Search Report dated Apr. 4, 2007, 2 pages.

(56) **References Cited**

OTHER PUBLICATIONS

Snyder, S.J., "Shoulder Arthroscopy: Arthroscopic Treatment of the Acromioclavicular Joint", Chapter 13, 2nd Edition, 2003, 167-183.
U.S. Appl. No. 60/160,710, filed Oct. 20, 1999, Cauthen.
U.S. Appl. No. 09/484,706, filed Jan. 18, 2000, Cauthen.
U.S. Appl. No. 12/509,112: Non-Final Office Action, dated Jul. 12, 2012, 8 pages.
U.S. Appl. No. 12/509,112: Restriction Requirement, dated Nov. 17, 2011, 8 pages.
U.S. Appl. No. 12/509,112: Restriction Requirement, dated Apr. 10, 2012, 6 pages.
U.S. Appl. No. 13/095,192: Restriction Requirement, dated Sep. 6, 2012, 10 pages.
European Search Report for Application No. 10251328.0 dated Oct. 29, 2010.
European Search Report for Application No. 05802651.9 dated Aug. 31, 2009, 7 pages.
Brinckmann et al., "A laboratory model of lumbar disc protrusion", Fissure and Fragment Institut fur Experimentelle Biomechanik, Universitat, Munster, German, Spine (Phila., PA 1976) Jan. 15, 1994, 19(2): 228-235.
Maroon et al., "Microdiscectomy versus Chemonucleolysis", Neurosurgery, vol. 16(5), 644-649, May 1985.
Mitek Brochure, Rapid Loc, "Surgical Technique Guide for Repair of Meniscal Tears", 2001, 6 pages.
Biomet Maxfire Technique Guide, Meniscal Repair, 1994, 16 pages.
Cayenne Medical, Crossfix Meniscal Repair System, Surgical Technique Guide, Jul. 2009, 4 pages.
Hoffman et al., "Arthroscopic shoulder stablilization using Mitek anchors", Knee Surg., Sports Traumatol., Arthroscopy, Mar. 1995, vol. 3, Issue 1, 50-54.
Klinger, "Proceedings of the 1976 Meeting of the Deutsche Gesellschaft fur Neurochirurgica in Berlin", Acta Neurochirurgica, Sep. 1977, vol. 36, Issue 3-4, 265-294.
Mayer et al., "Percutaneous Endoscopic Lumbar Discectomy (PELD)", Neurosurg., Rev., Jun. 1993, 115-120.
Mayer et al., "Endoscopic Discectomy in Pediatric and Juvenile Lumbar Disc Herniation's", Journal of the Pediatric Orthopaedics, Part B, Jan. 1996, 3943.
Abstracts of the 7^{th} Annual Meeting of the Japanese Society of Micosurgery, Oct. 1980, Niigata, Japan, 8 pages.
Vuono-Hawkins et al., "Mechanical Evaluation of a Canine Intervertebral Disc Spacer: In Situ and In Vivo Studies", Journal of Orthopaedic Research, Jan. 1994, 119-127.
U.S. Appl. No. 61/328,251, filed Apr. 27, 2010, Overes.
U.S. Appl. No. 61/398,699, filed Jun. 29, 2010, Overes et al.
U.S. Appl. No. 61/432,755, filed Jan. 14, 2010, Henrichsen et al.
U.S. Appl. No. 61/443,142, filed Feb. 15, 2011, Henrichsen et al.
U.S. Appl. No. 61/461,490, filed Jan. 18, 2011, Henrichsen et al.

* cited by examiner

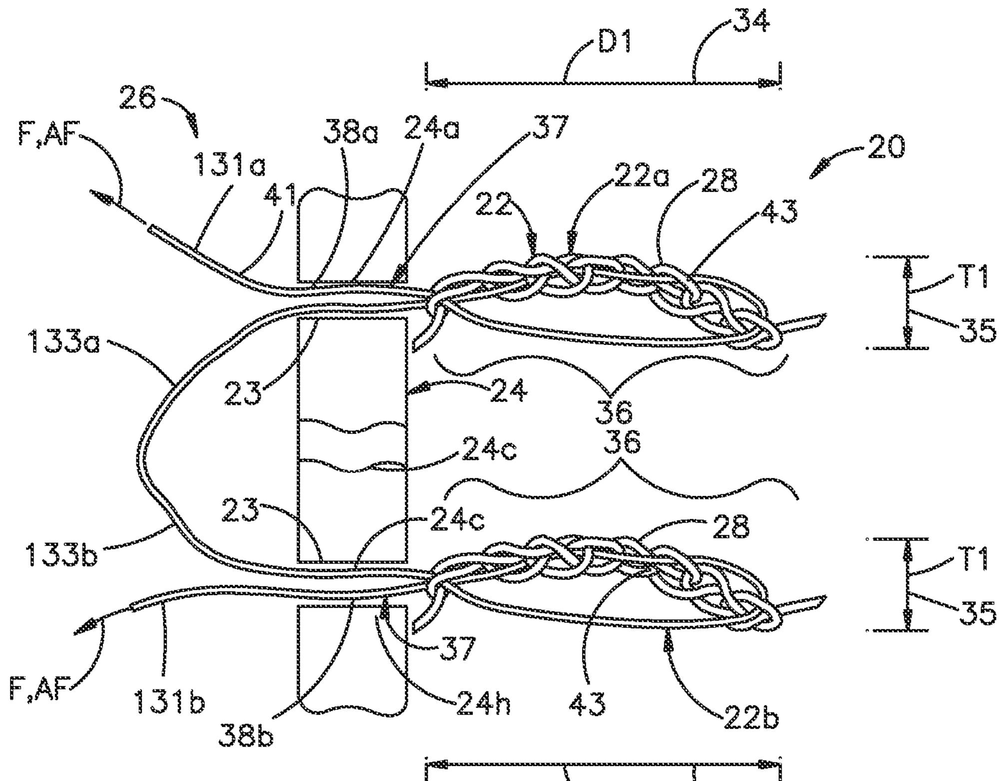
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Fig.1A

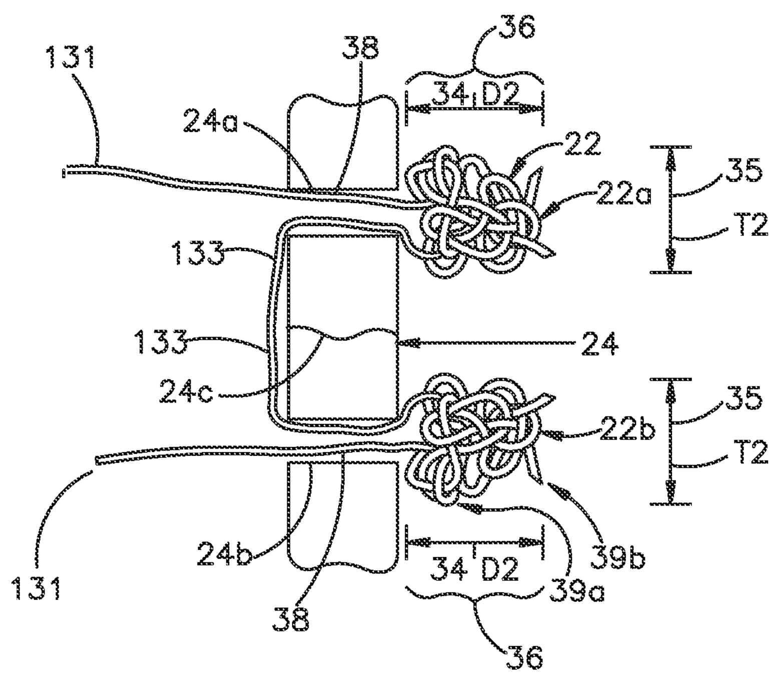
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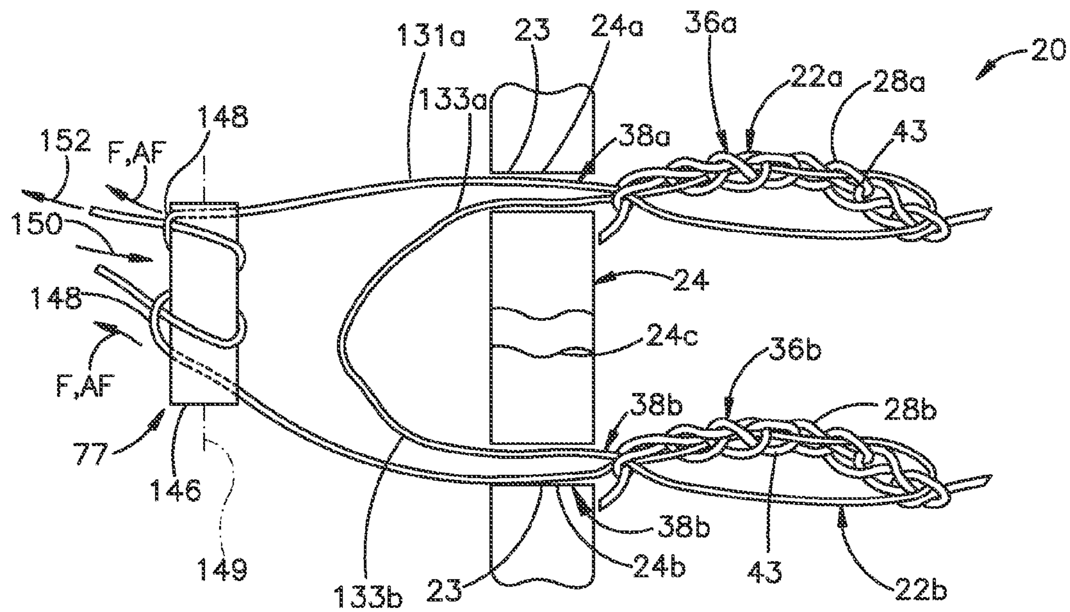
Fig.1B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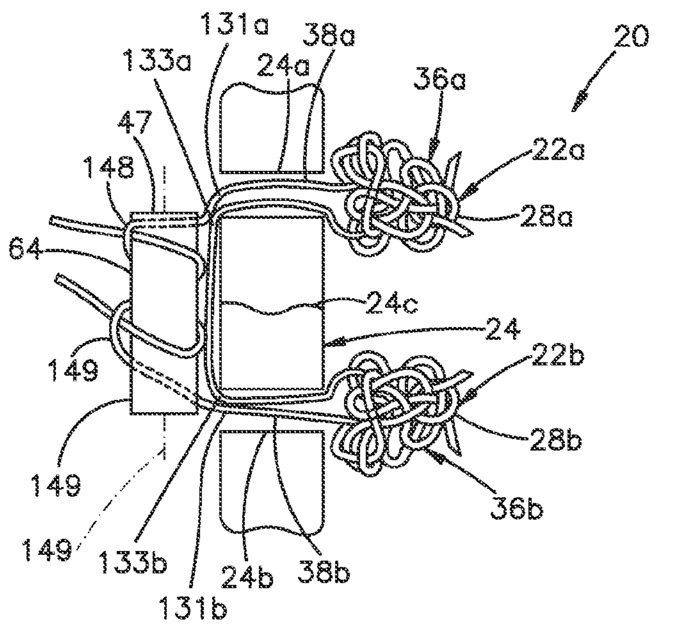
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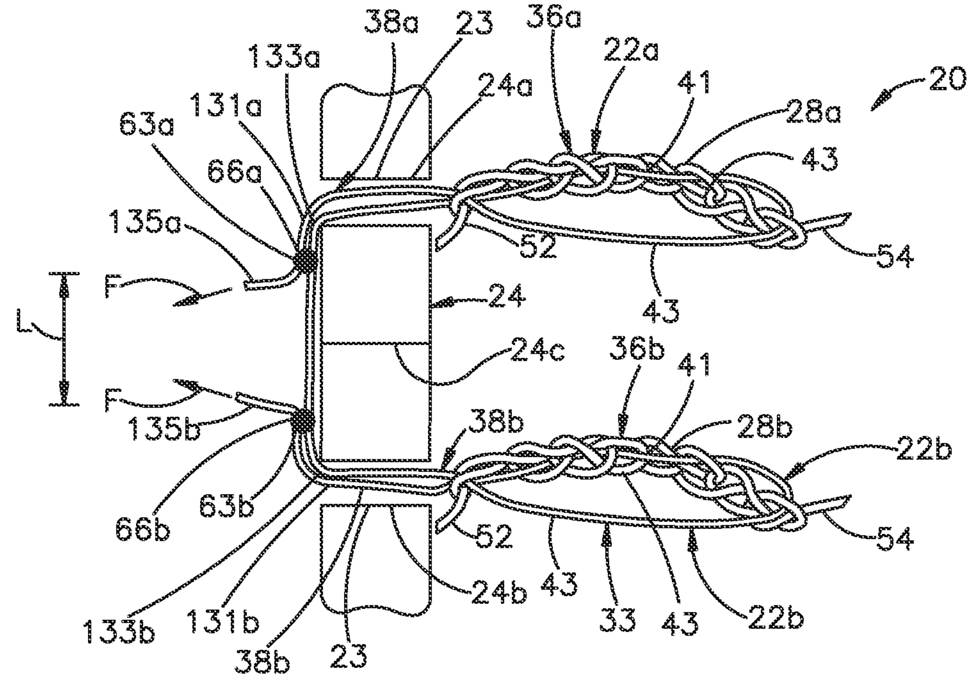
Fig.1D



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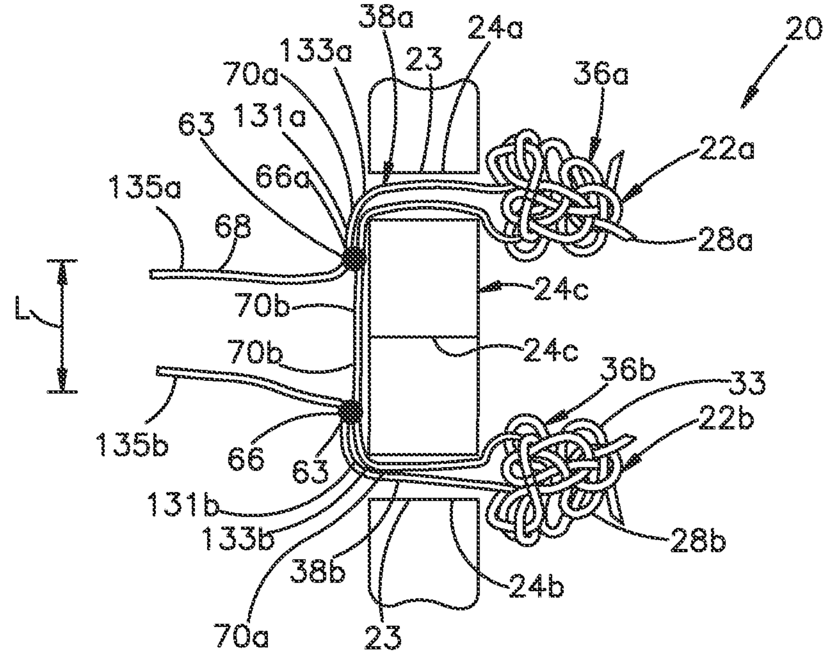

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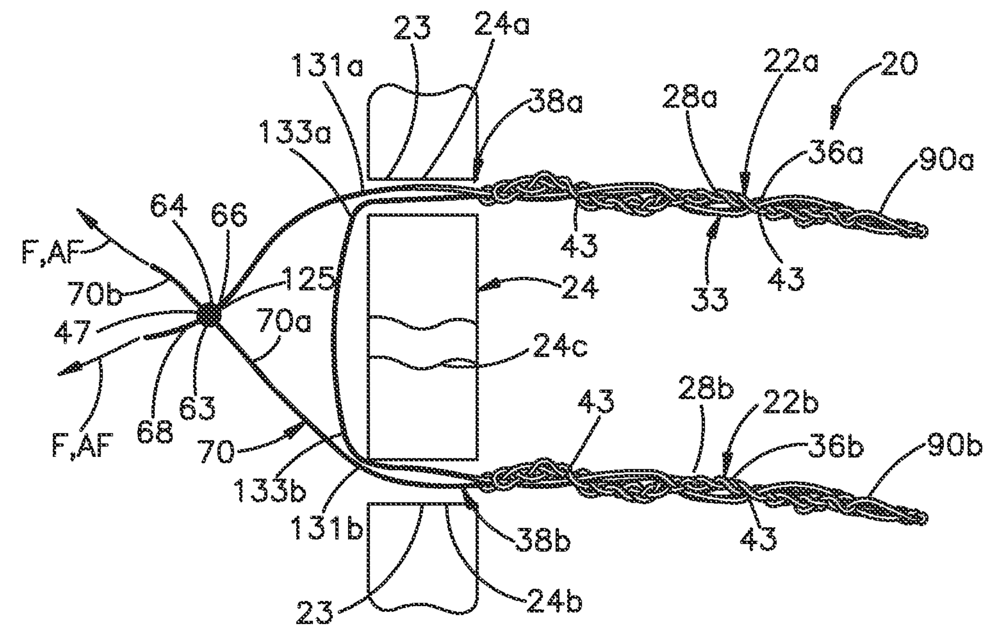

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Fig.1G

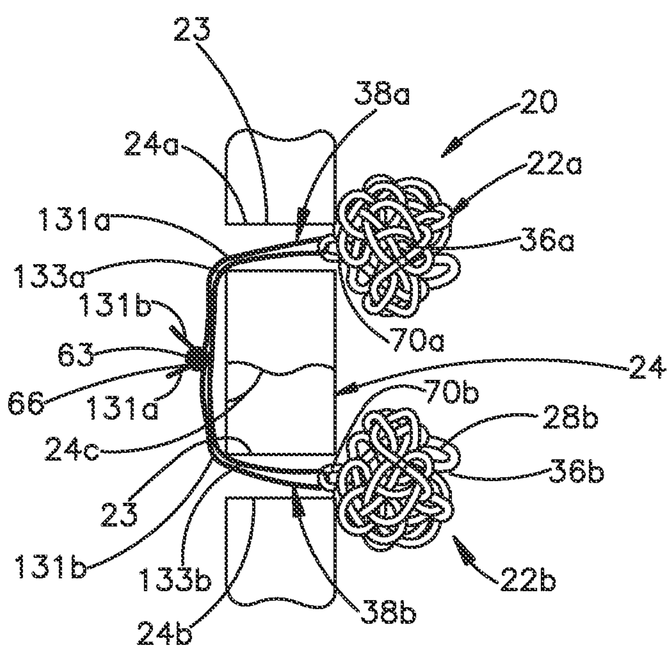

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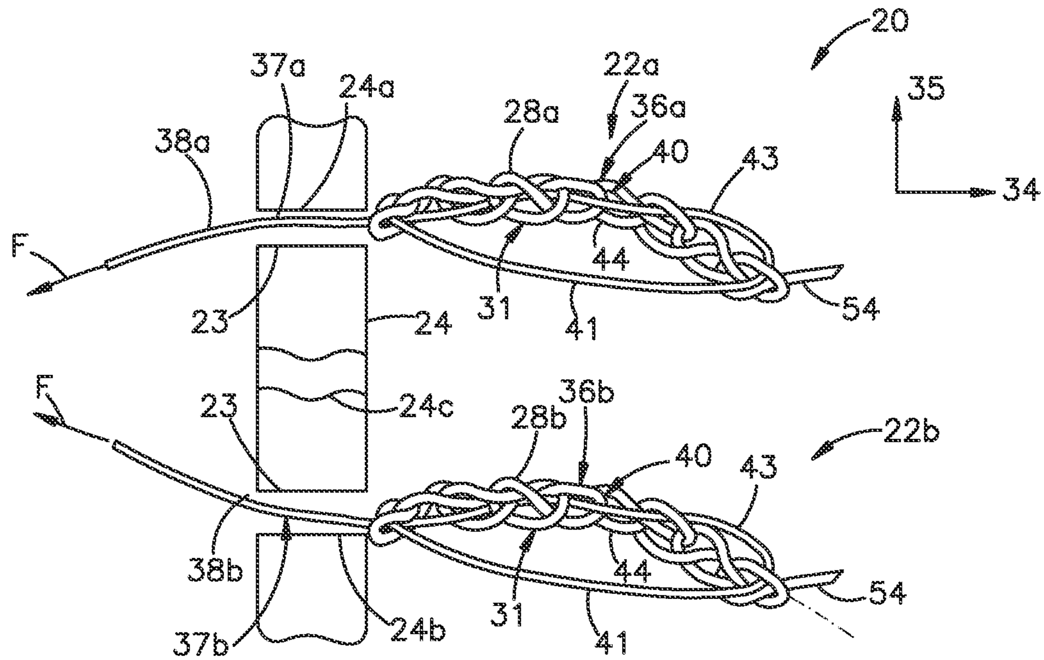
Fig.1H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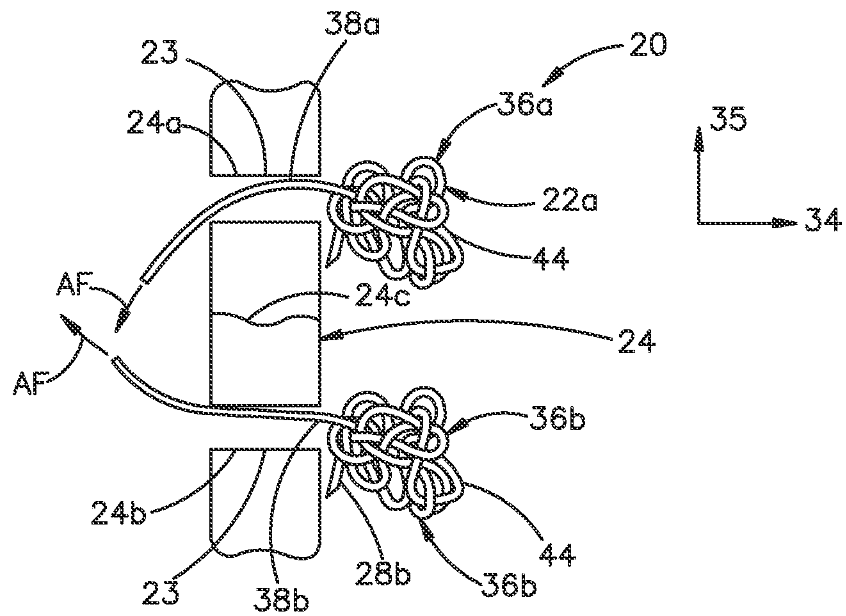
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Fig.2B

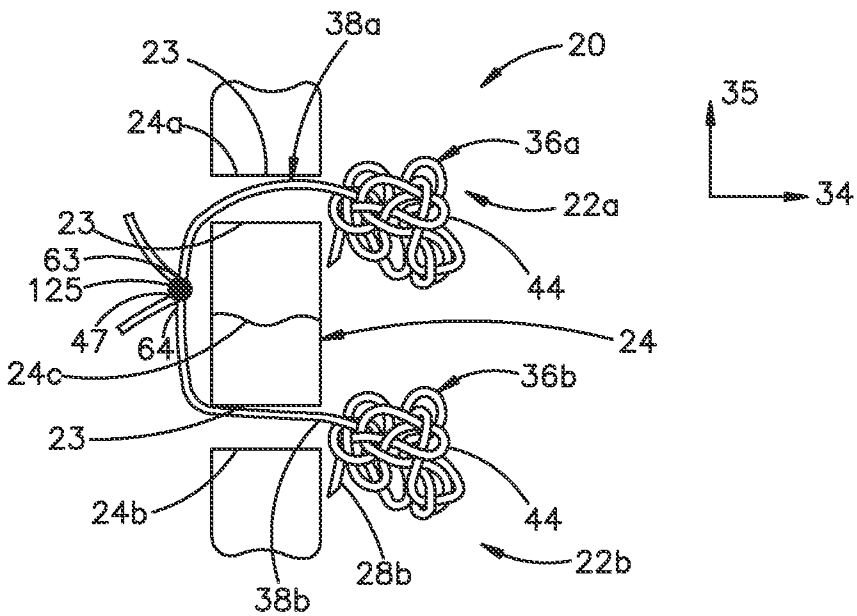
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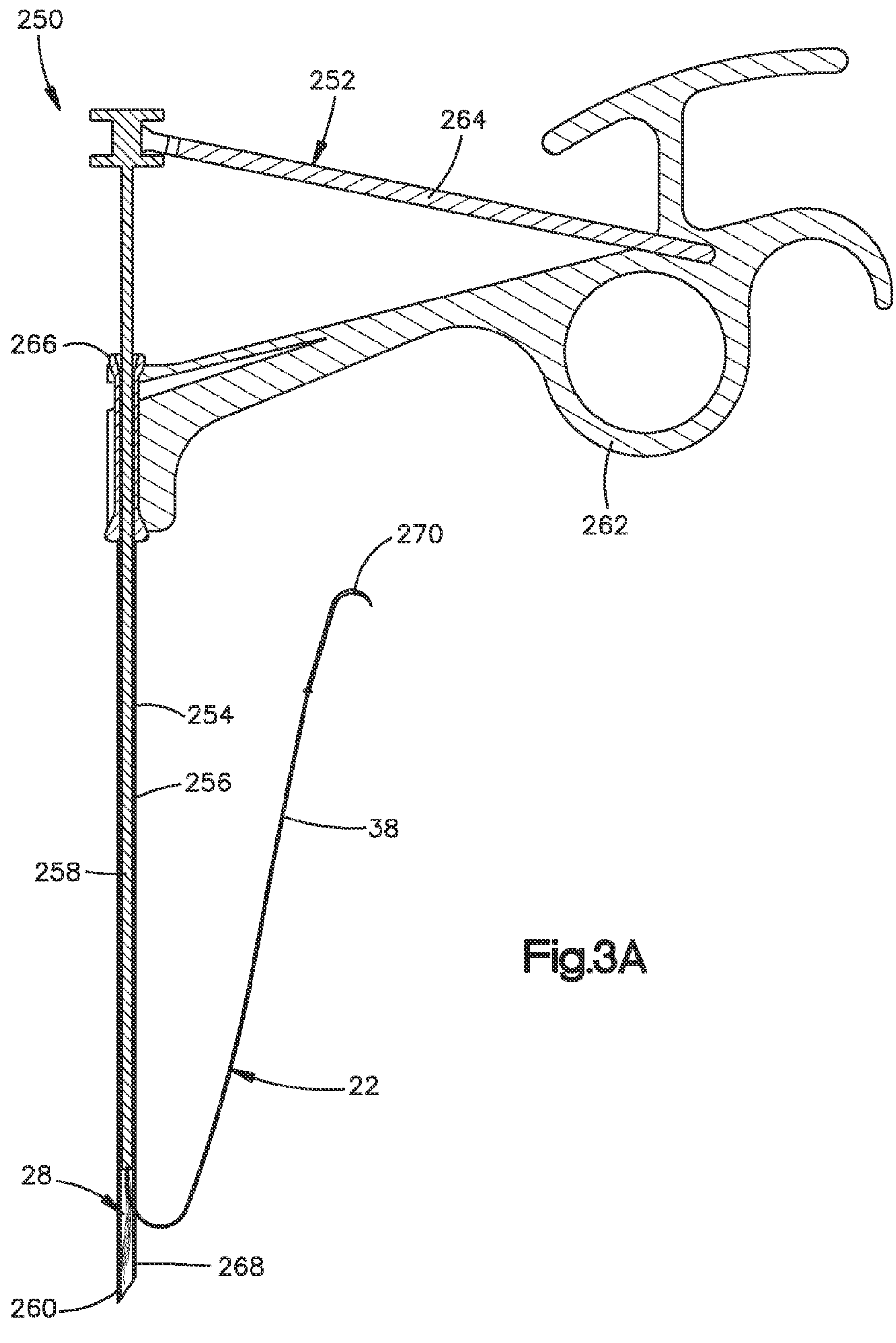
Fig.2C



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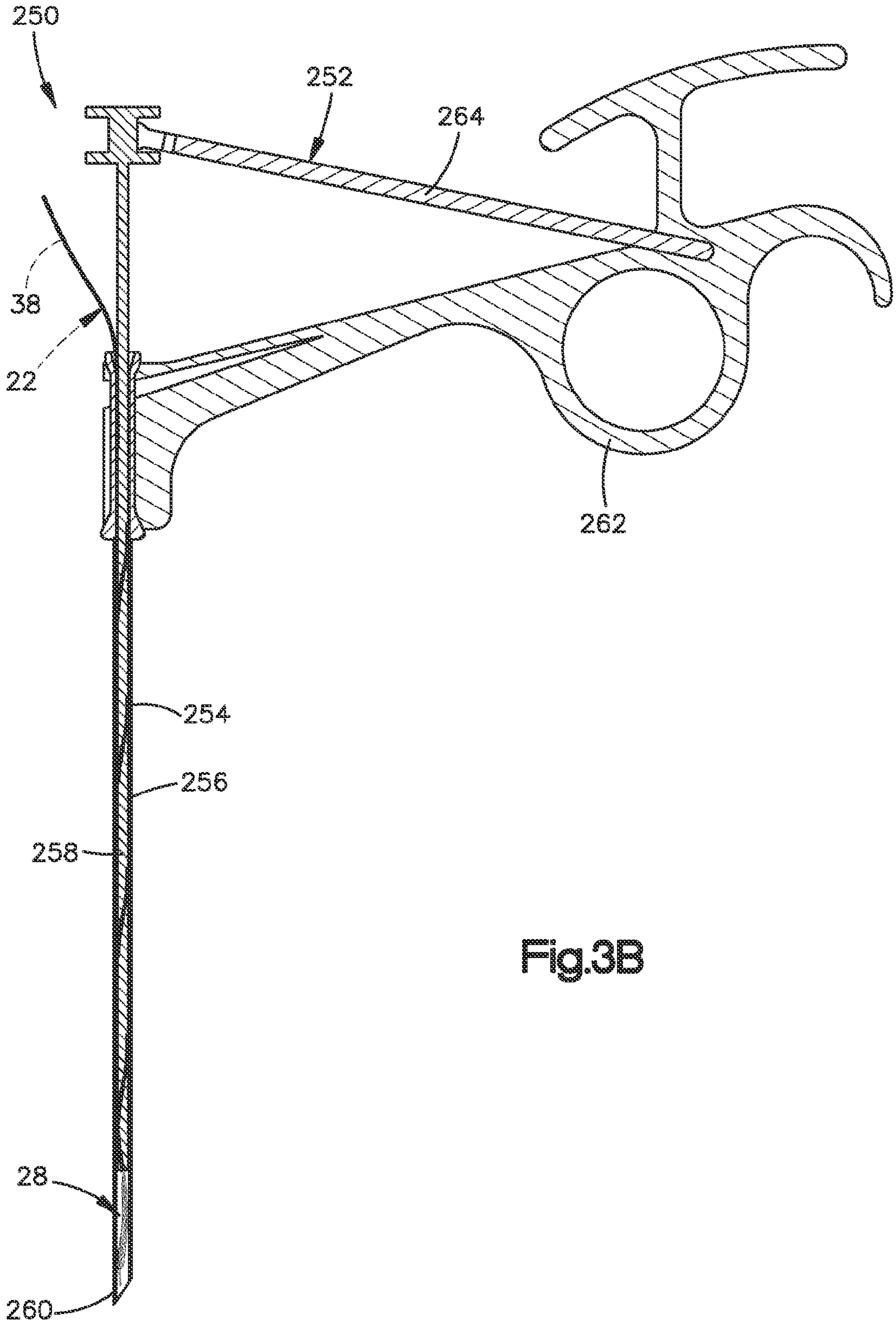

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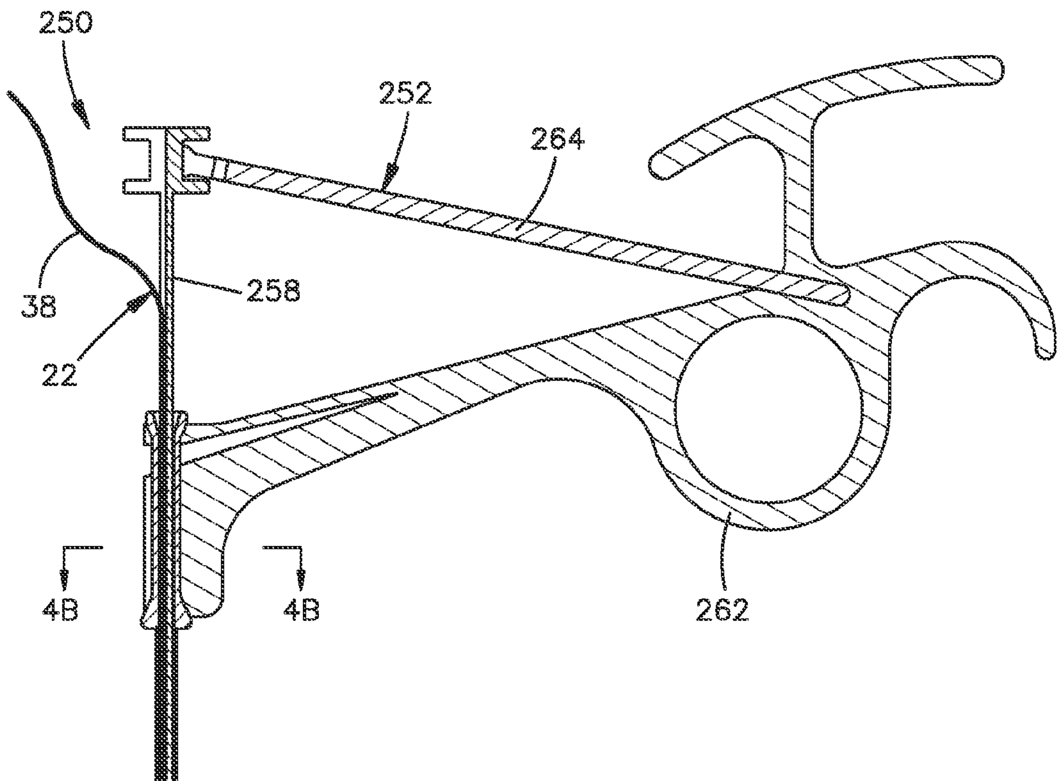
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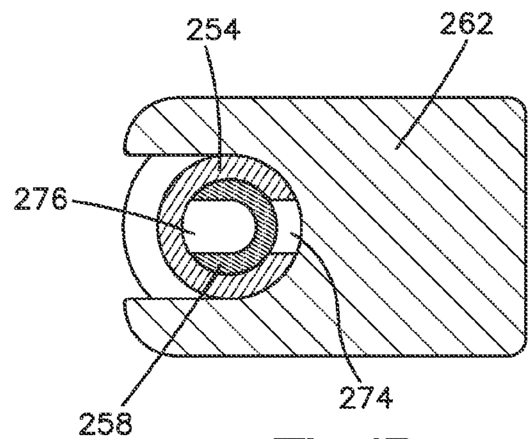
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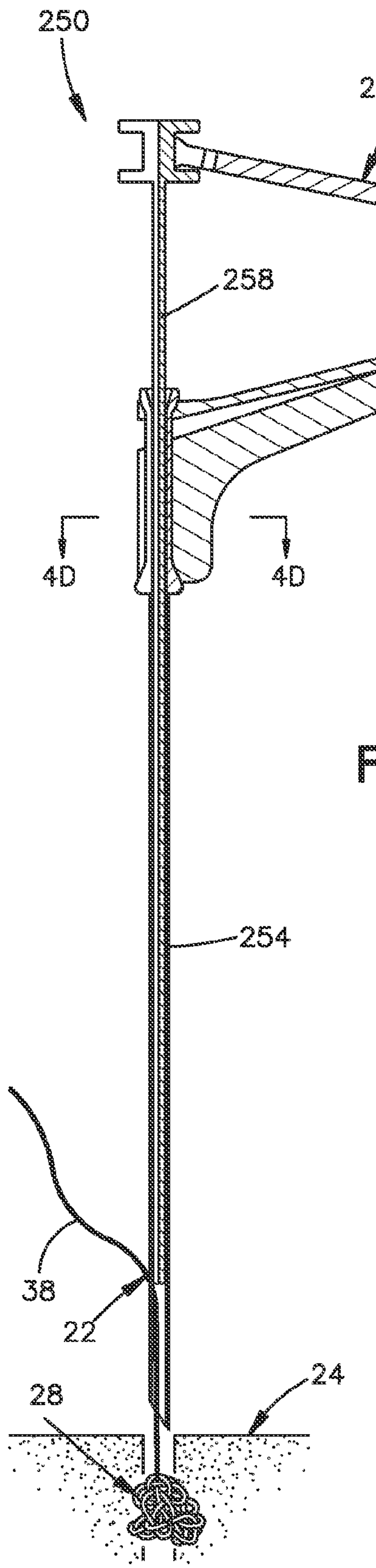

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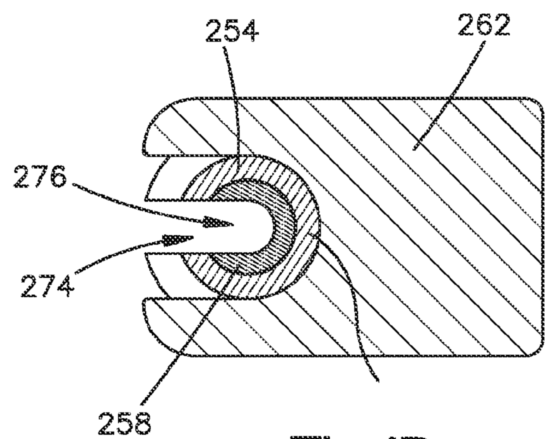

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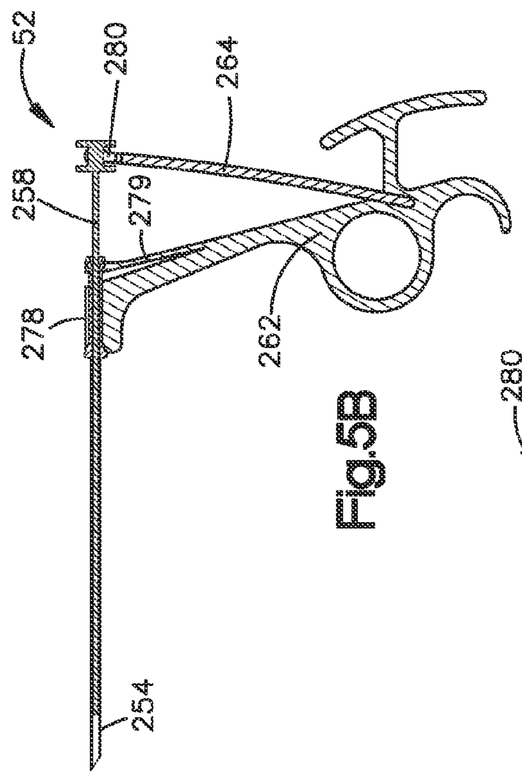

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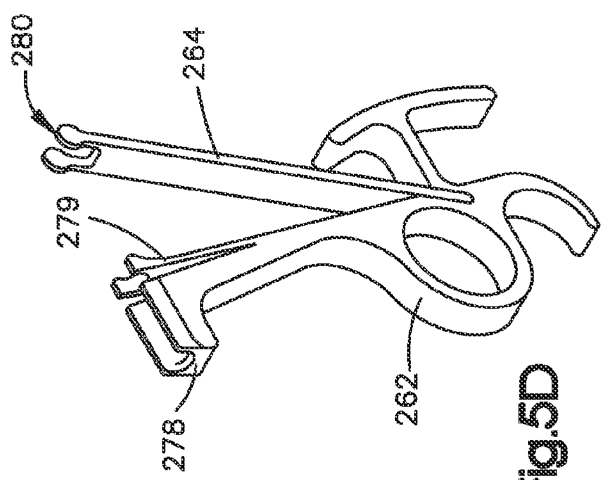
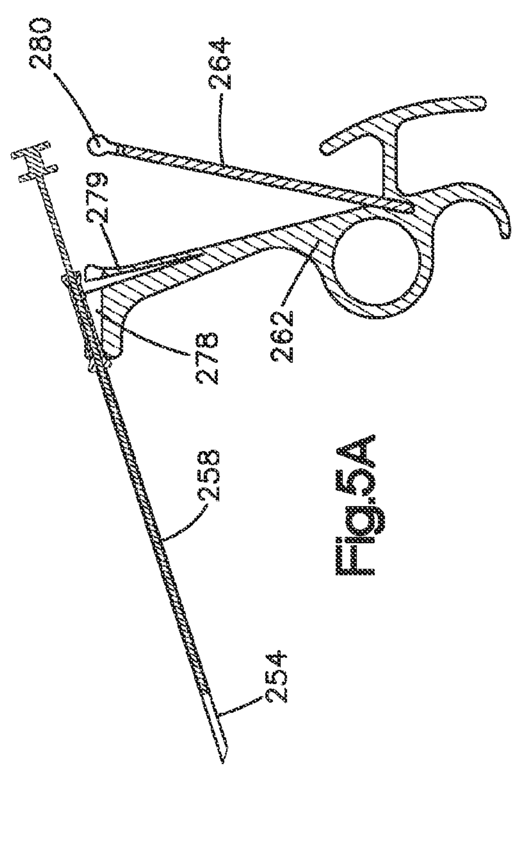


Fig.5D



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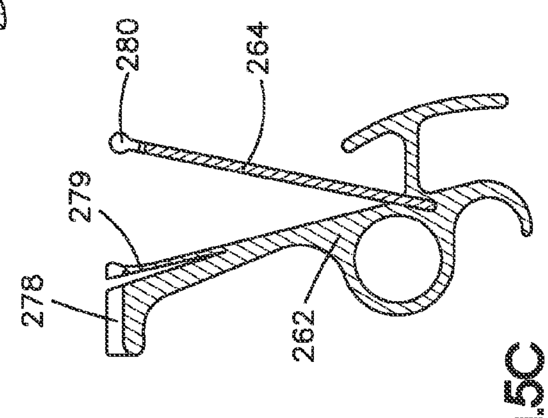

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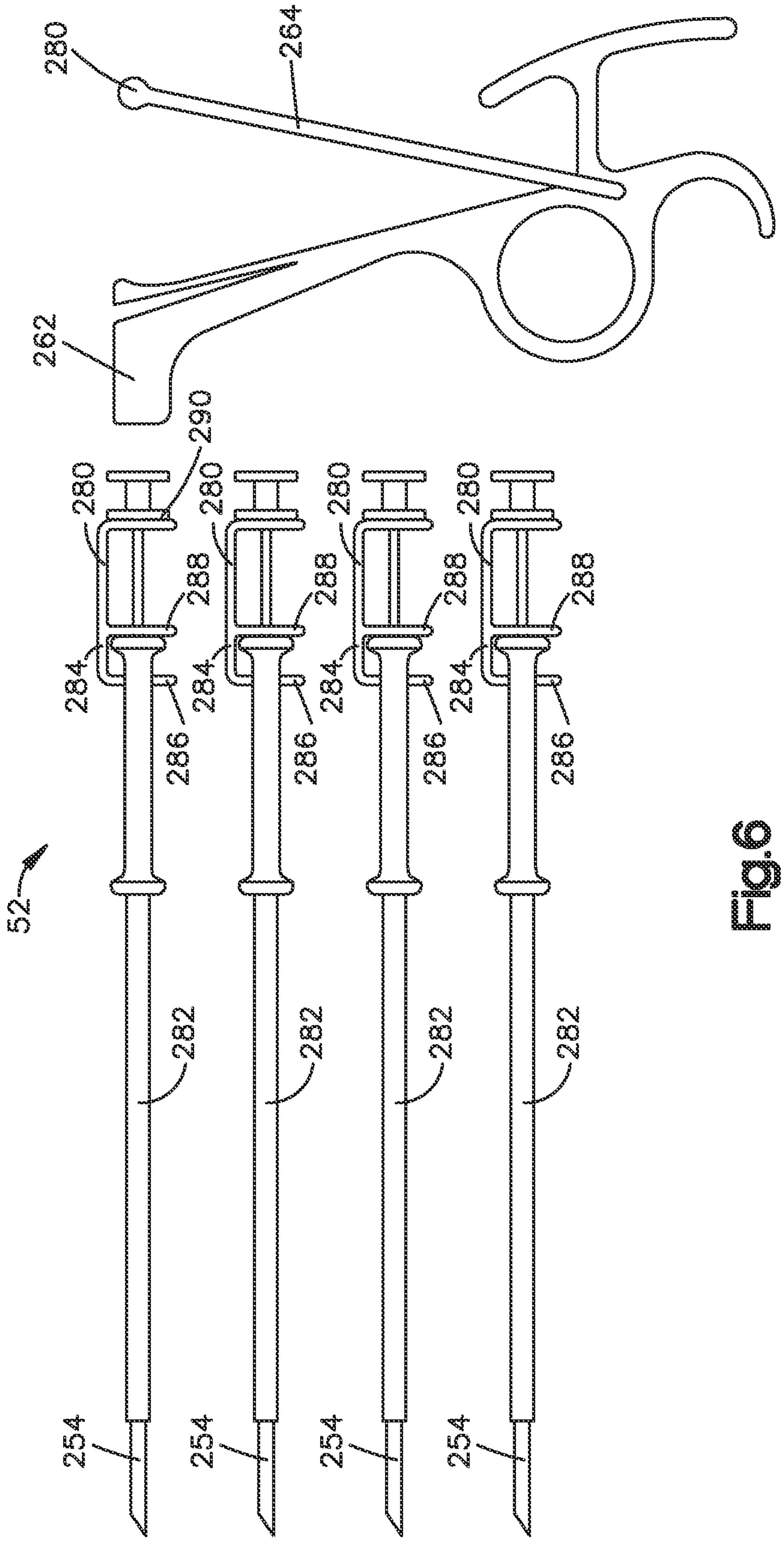

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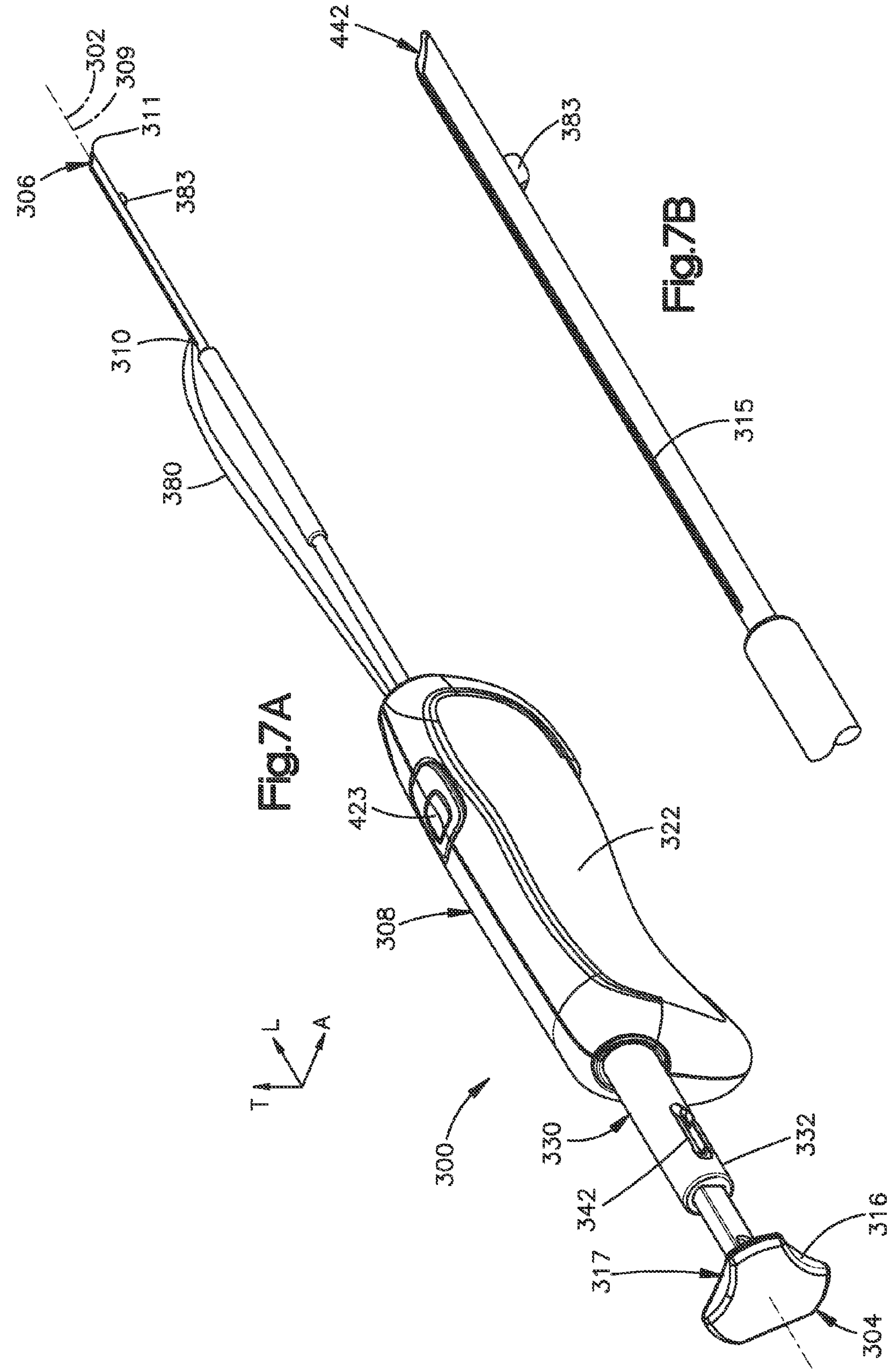
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Fig.7A

Fig.7B

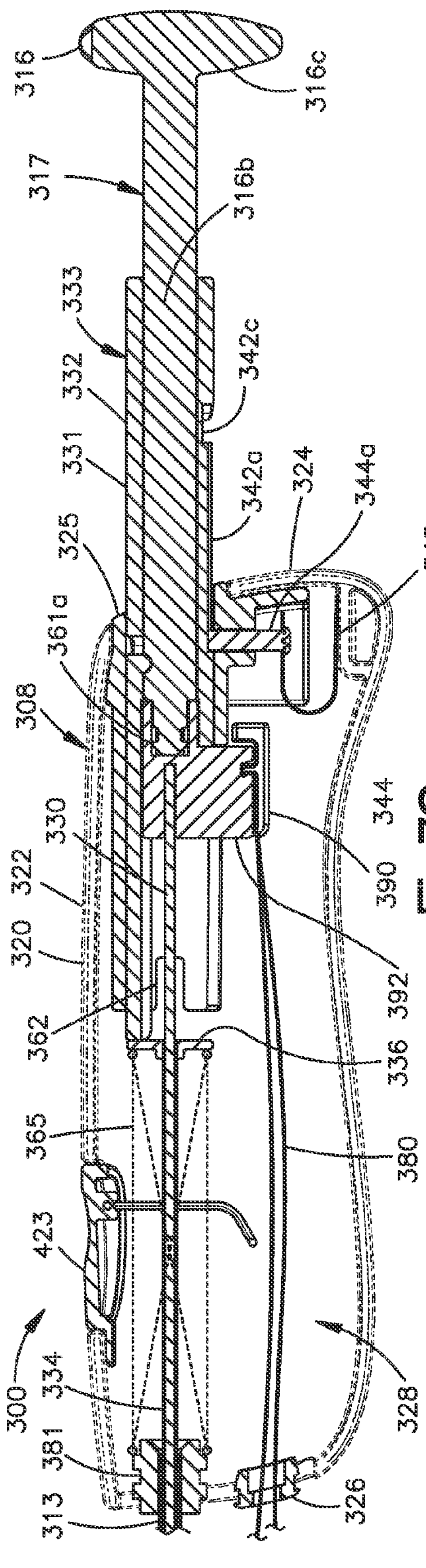
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Fig.7C

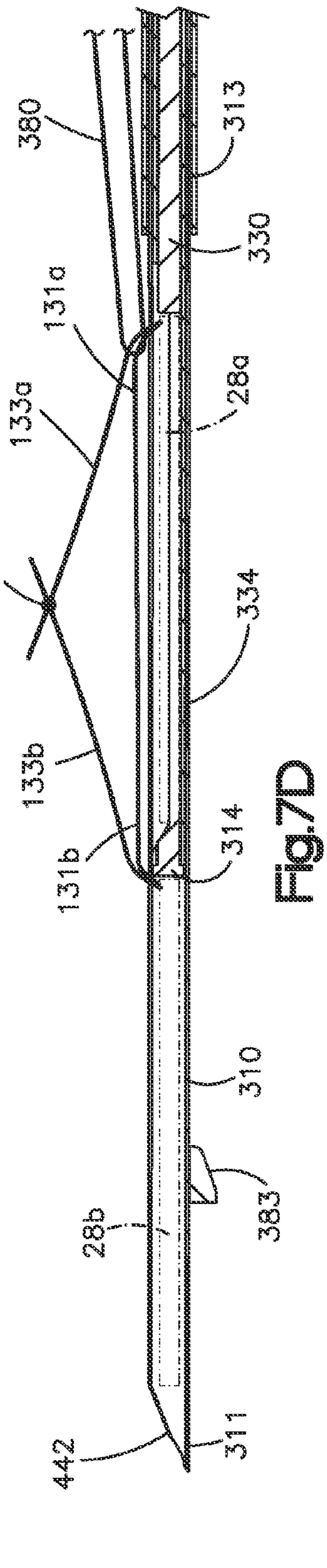
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Fig.7D

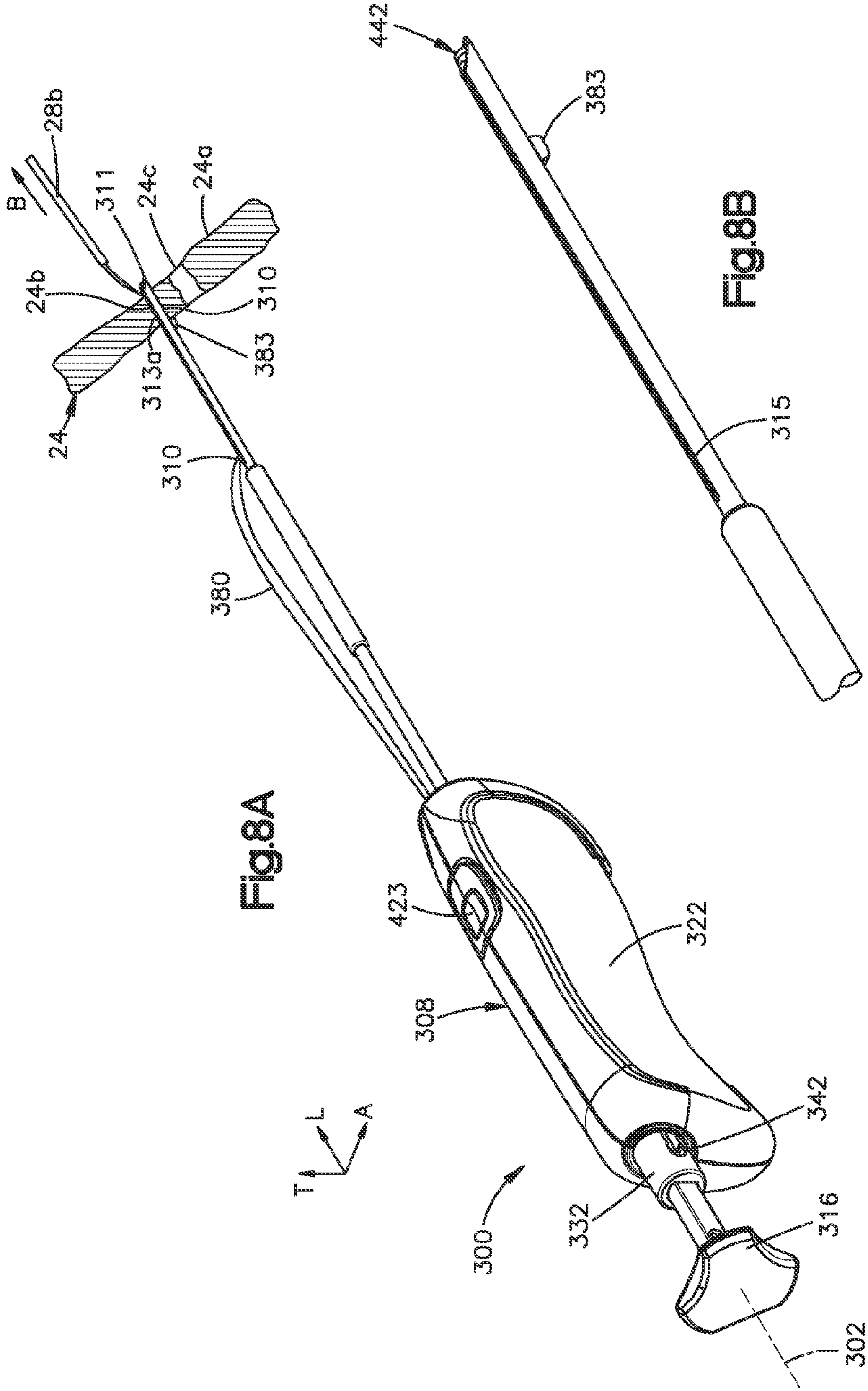
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Fig.8A

Fig.8B

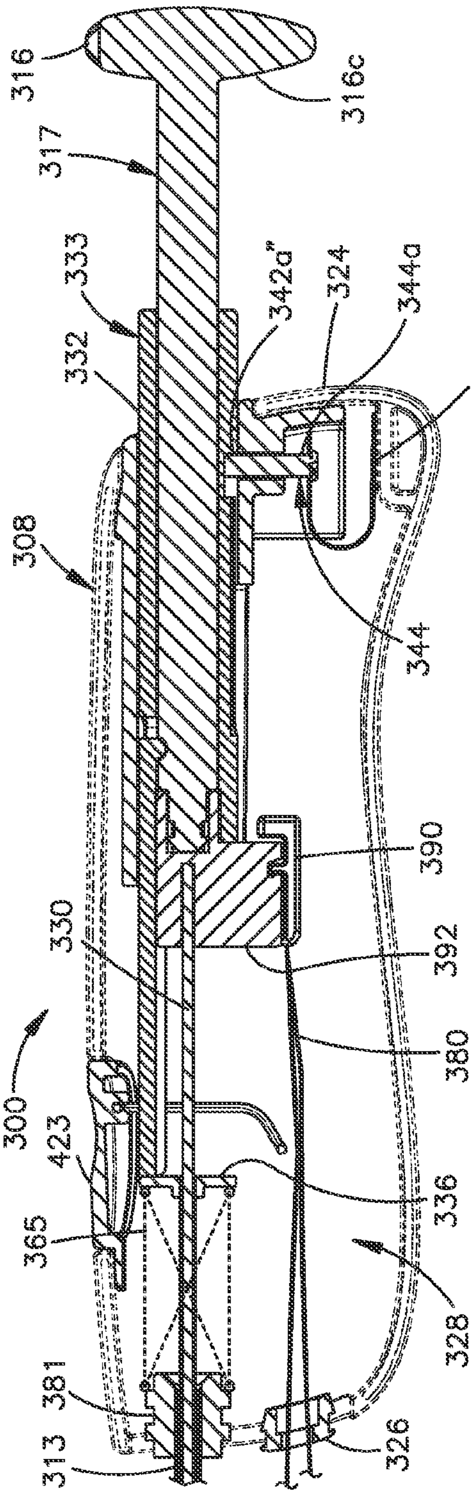
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Fig.8C

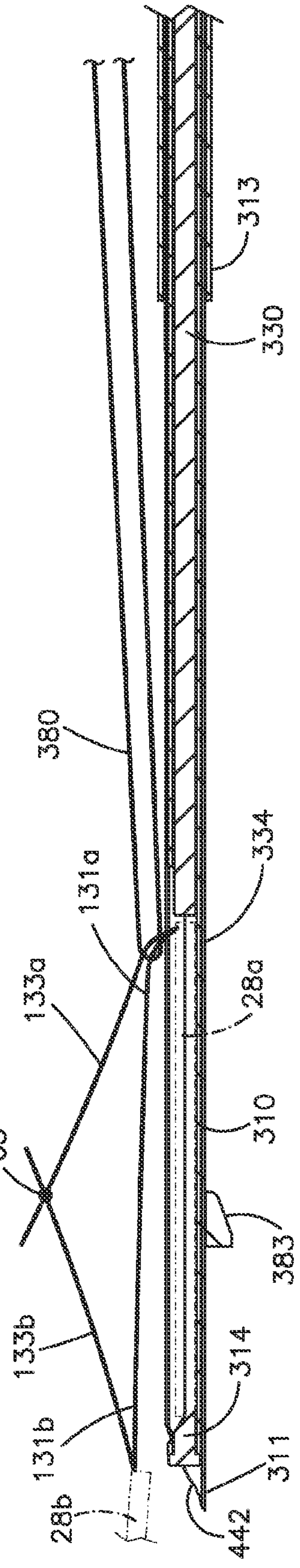
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Fig.8D

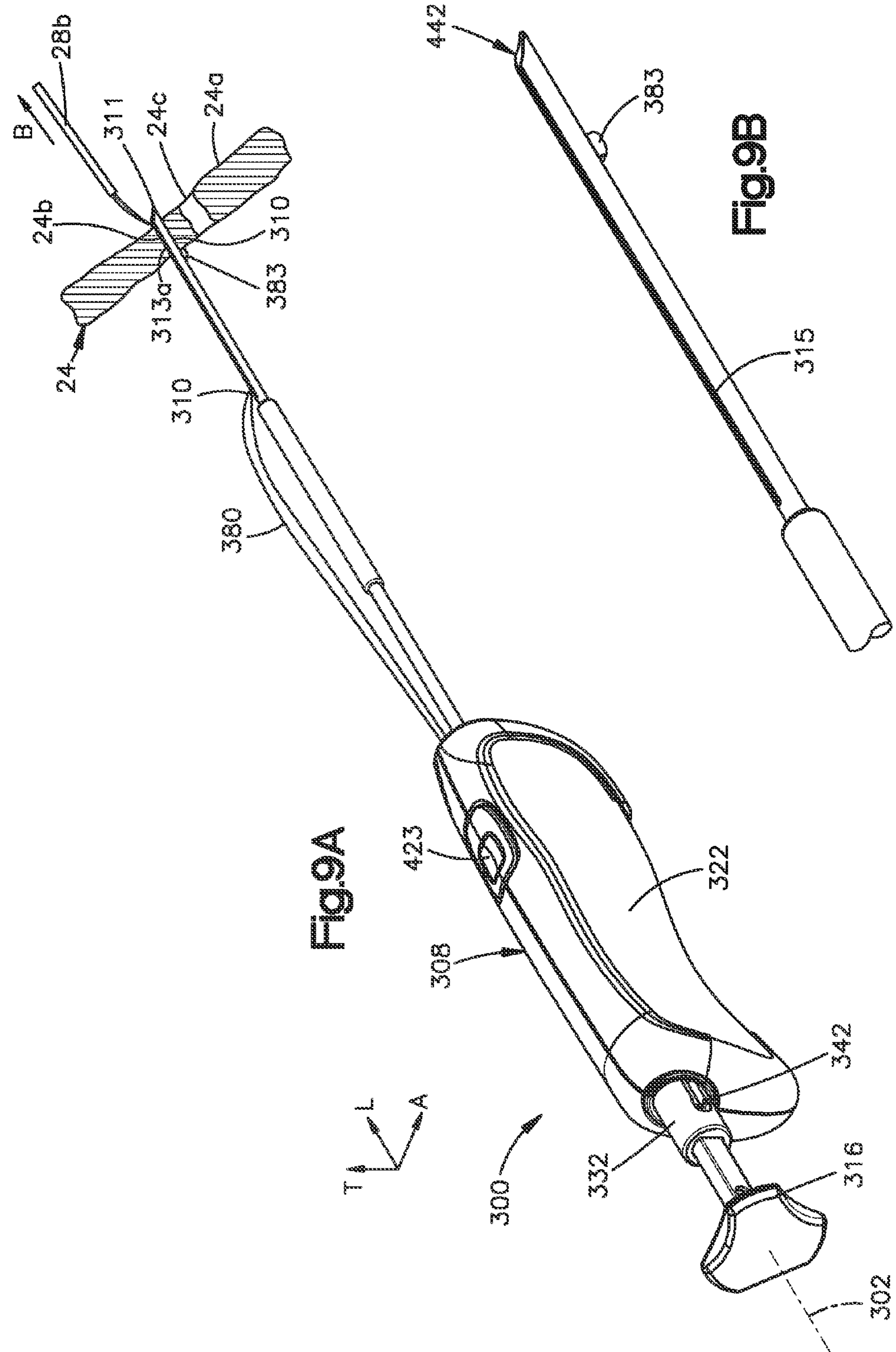

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Fig.9A

Fig.9B

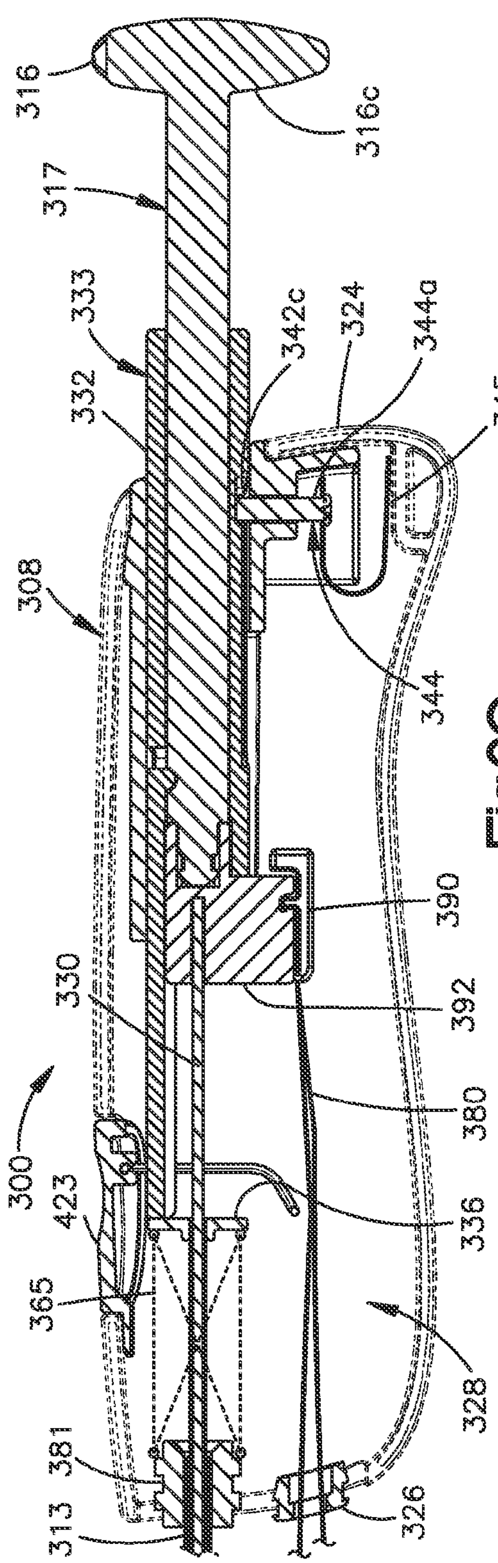
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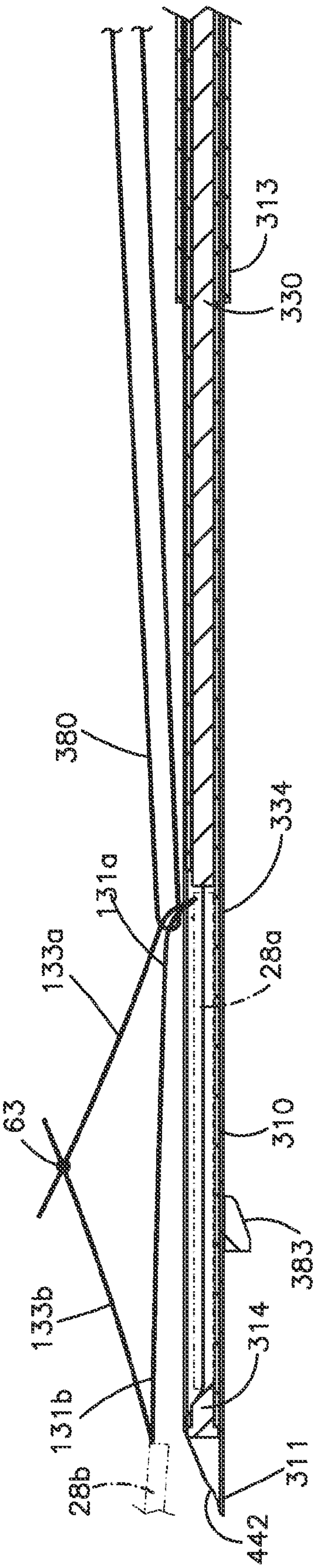
Fig.9C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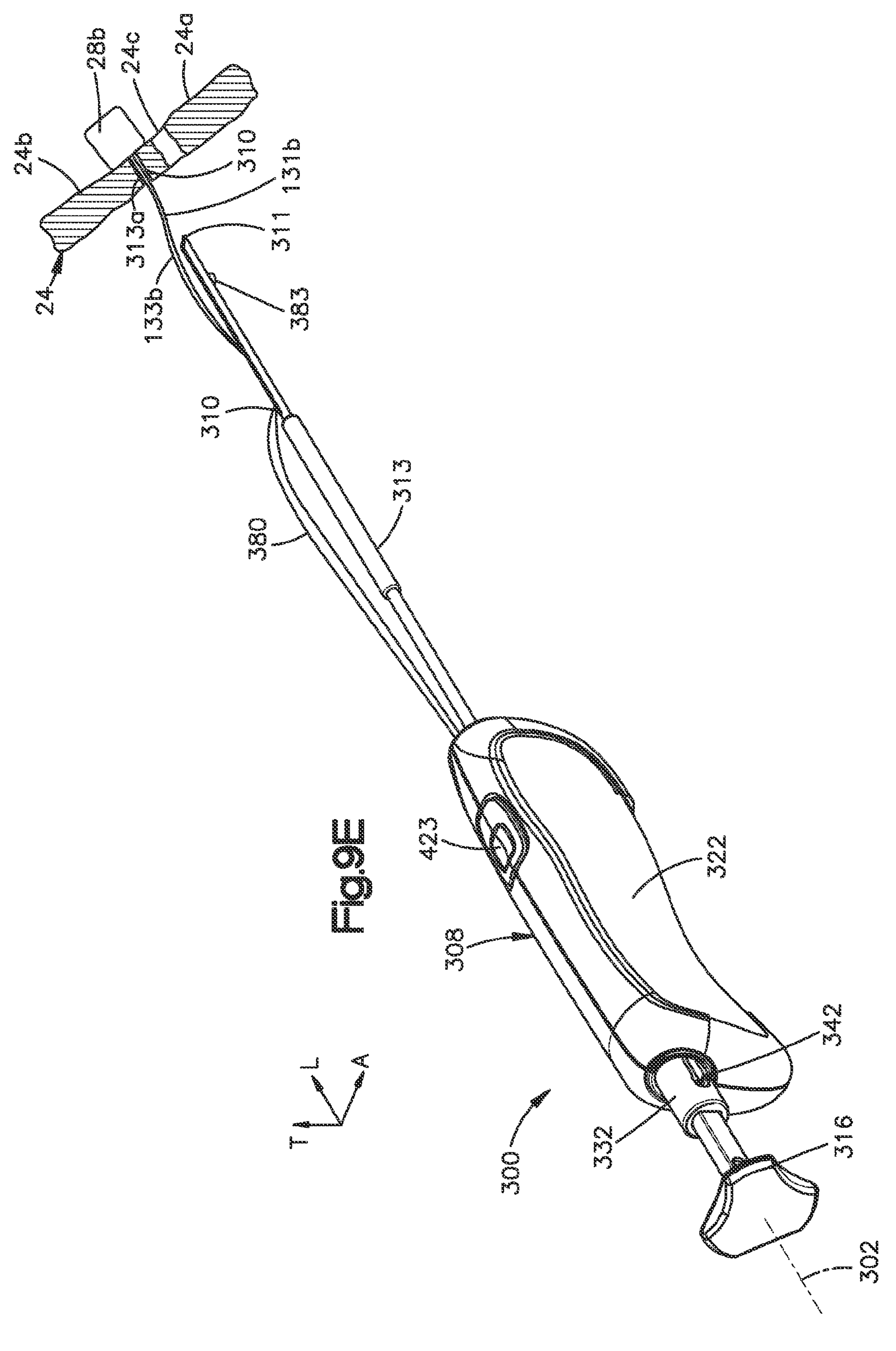
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Fig.9E

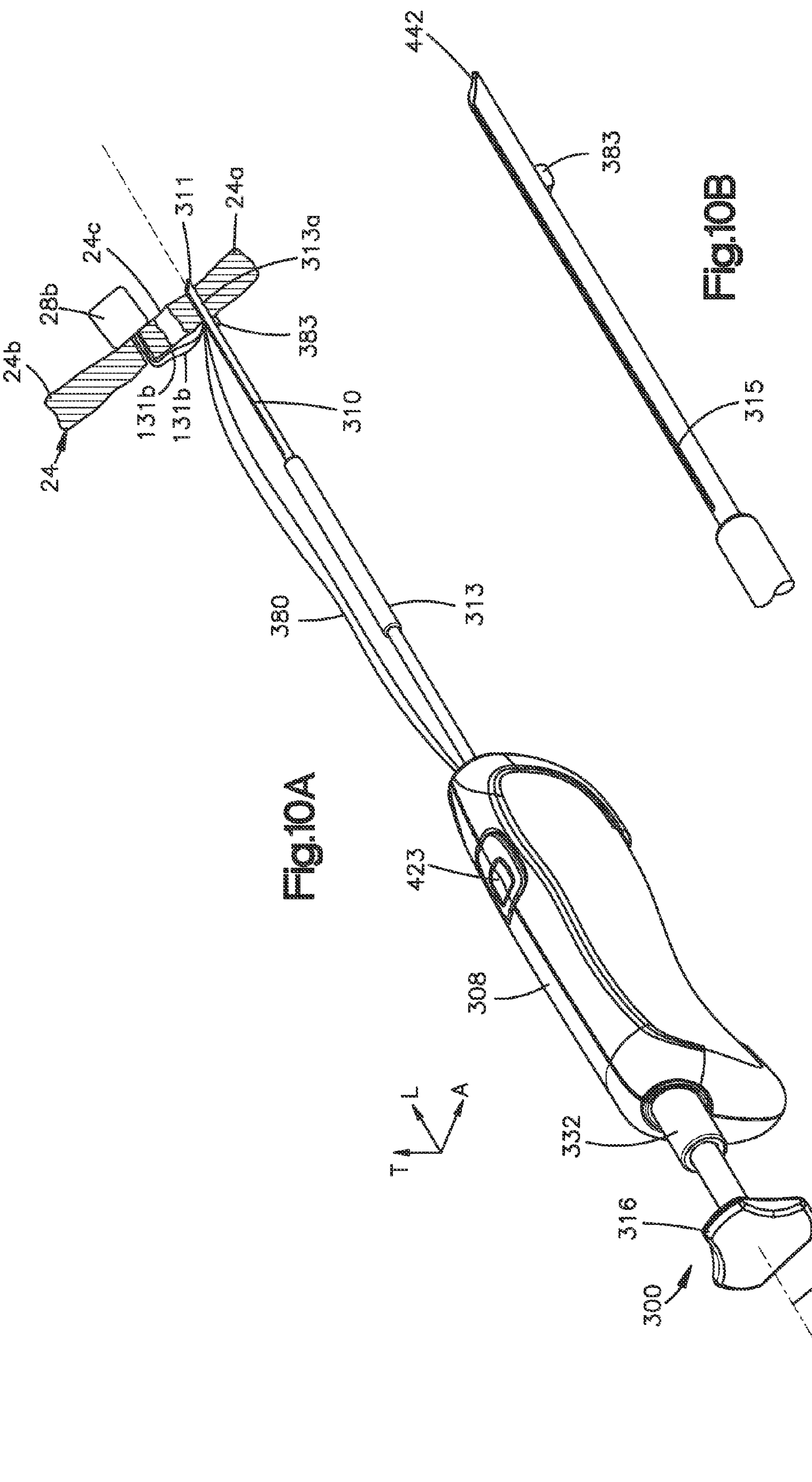

Fig.10B

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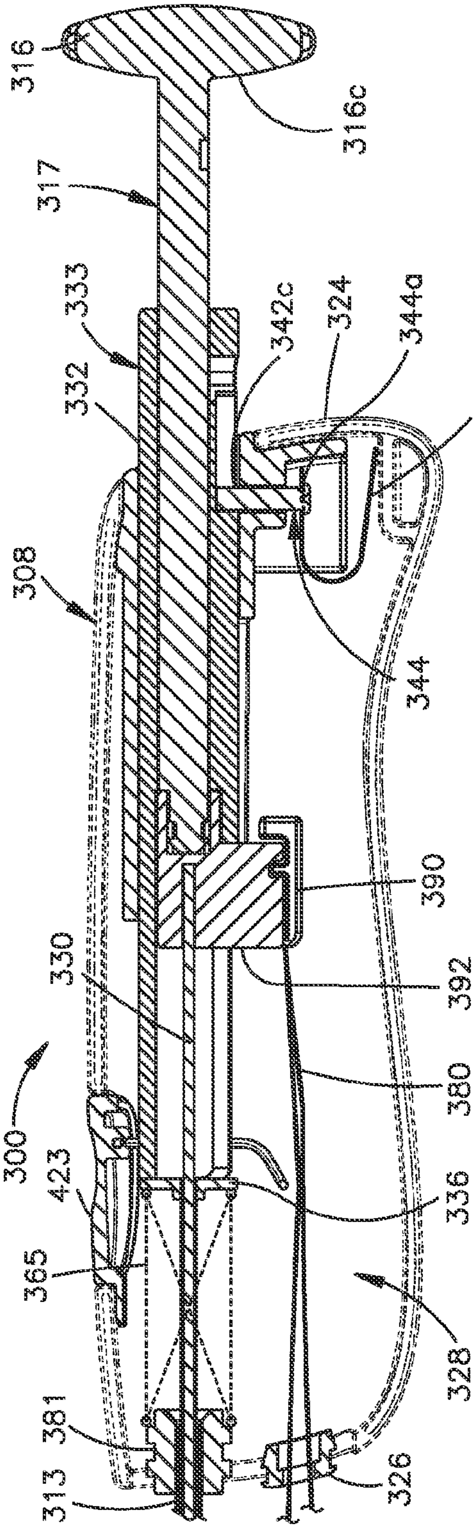

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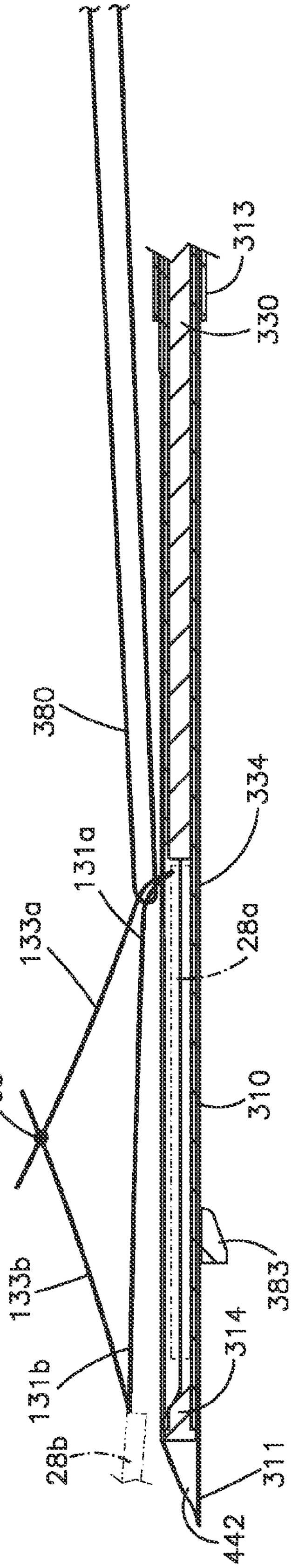

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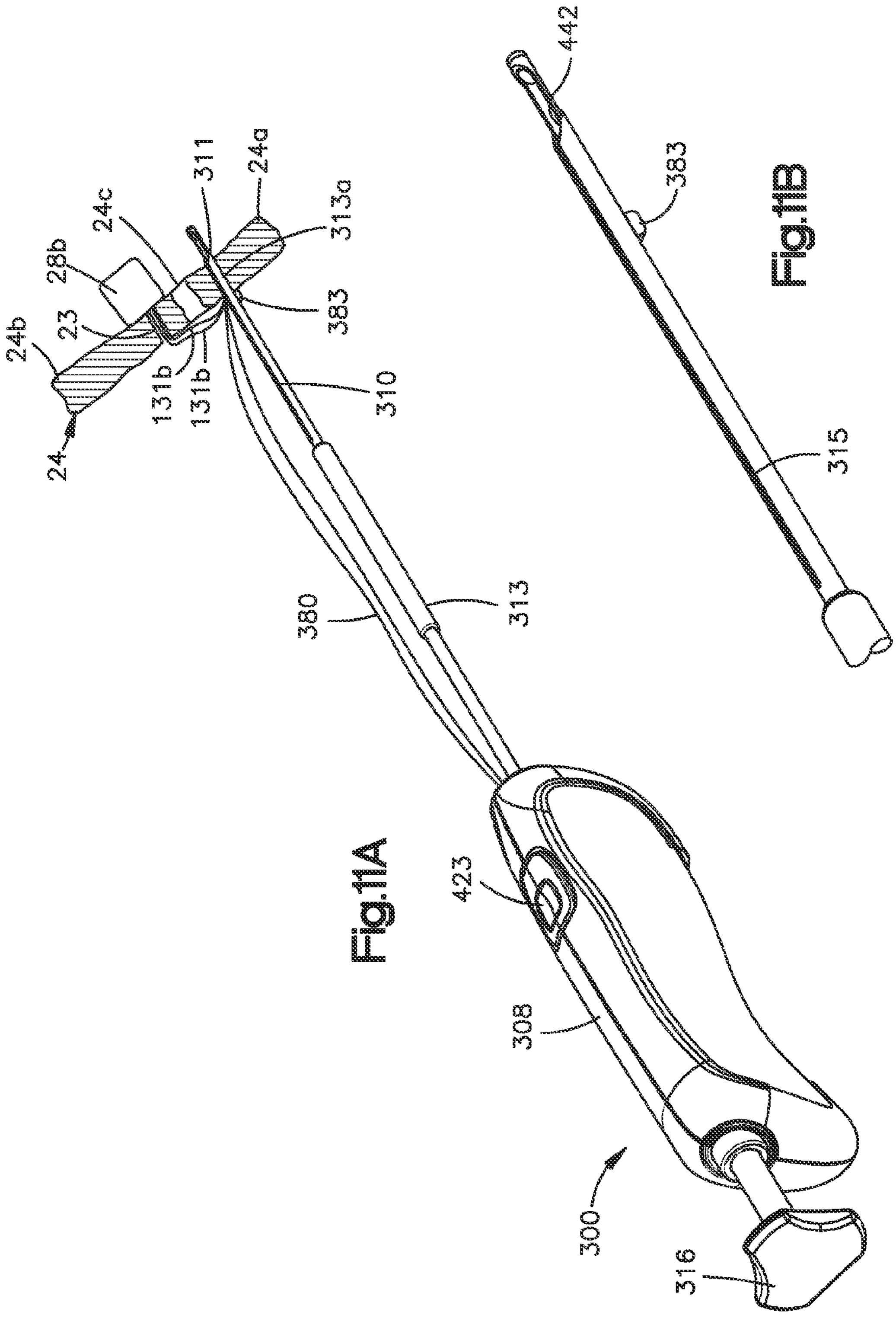

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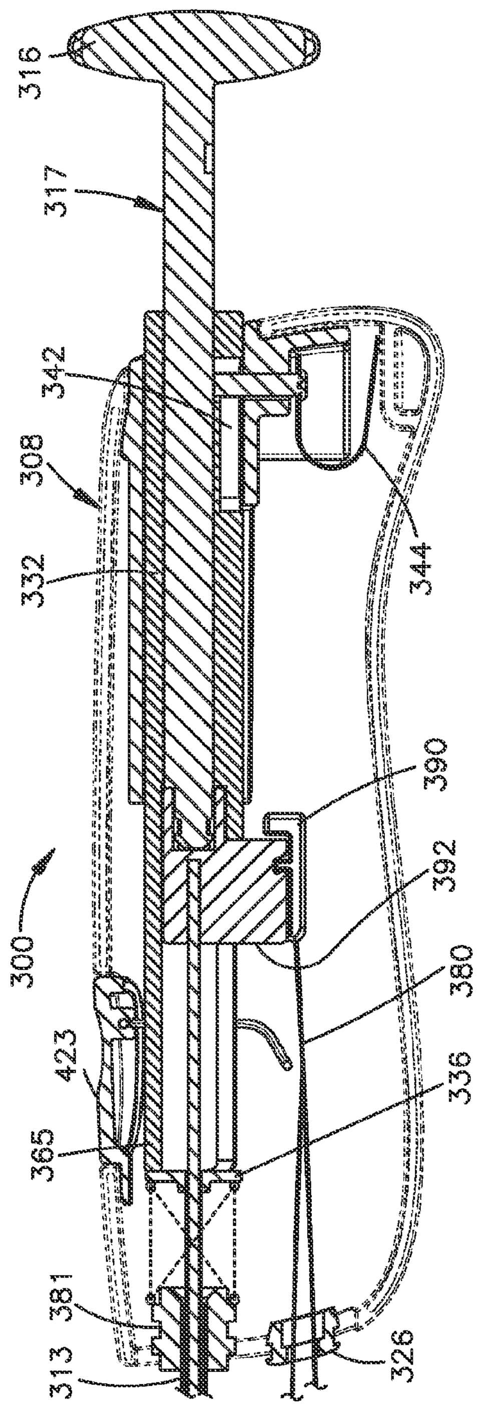

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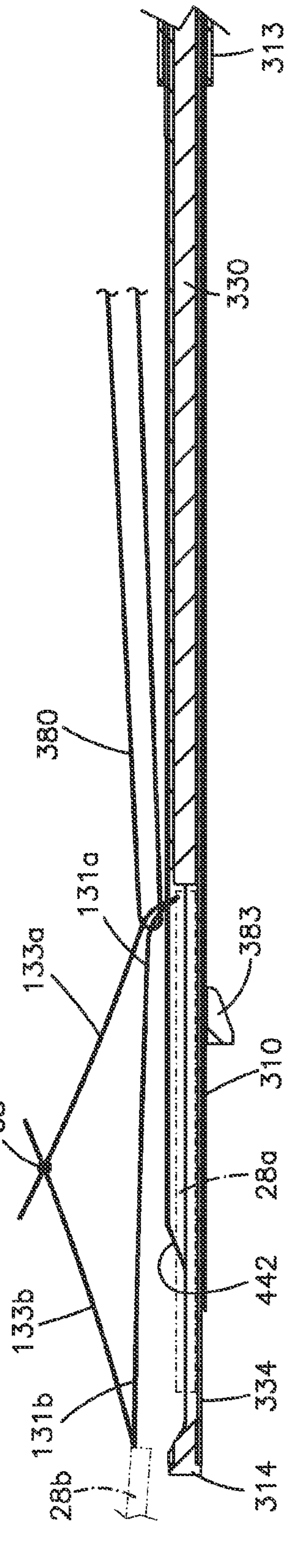

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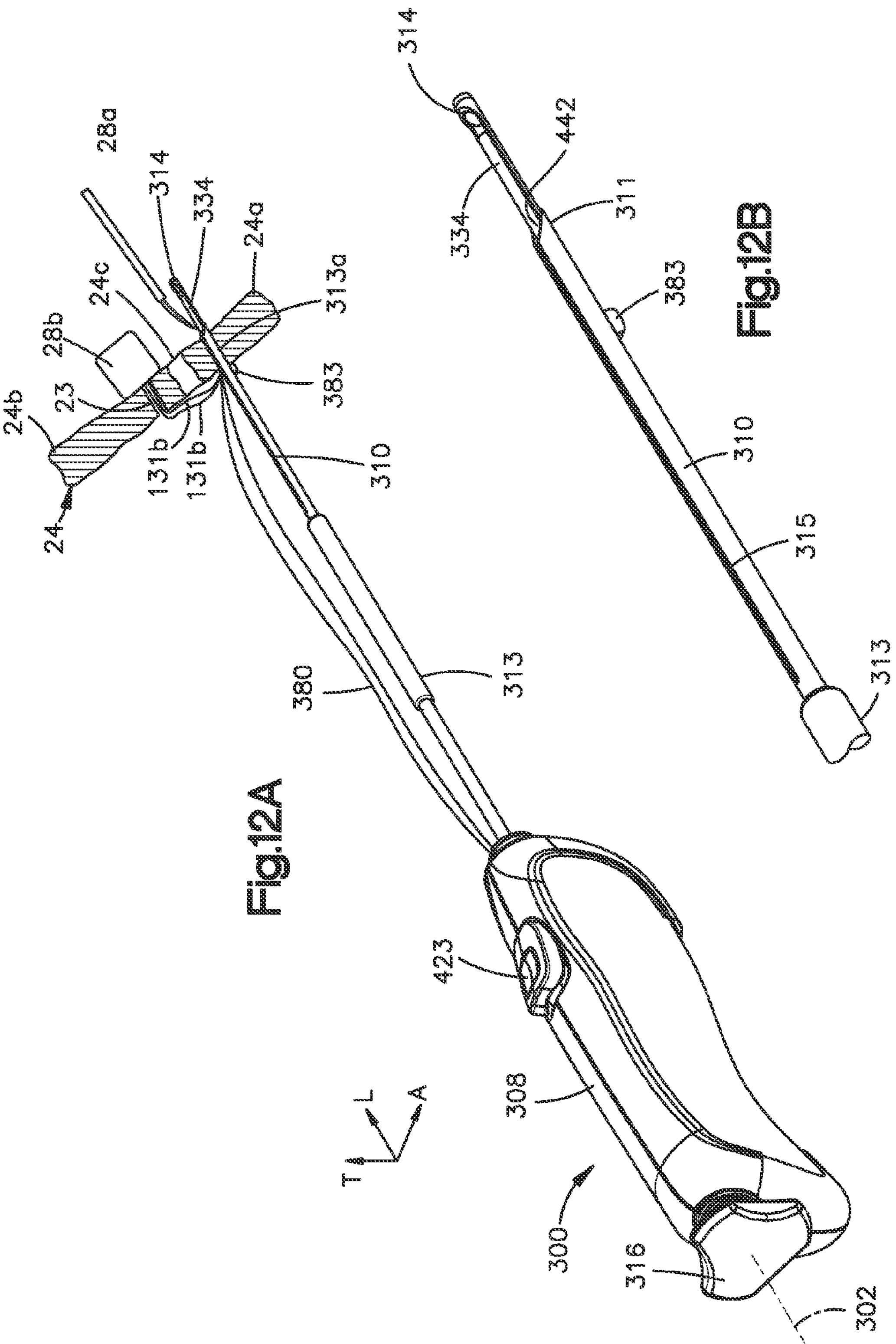


Fig.12A

Fig.12B

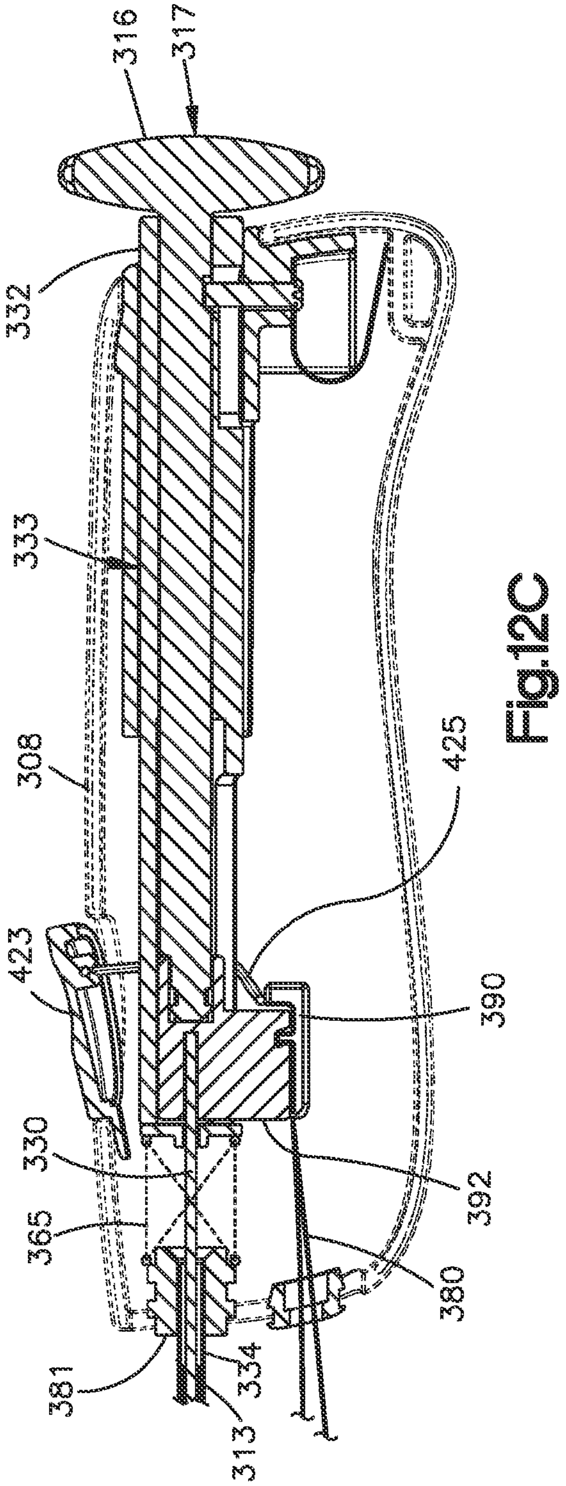


Fig.12C

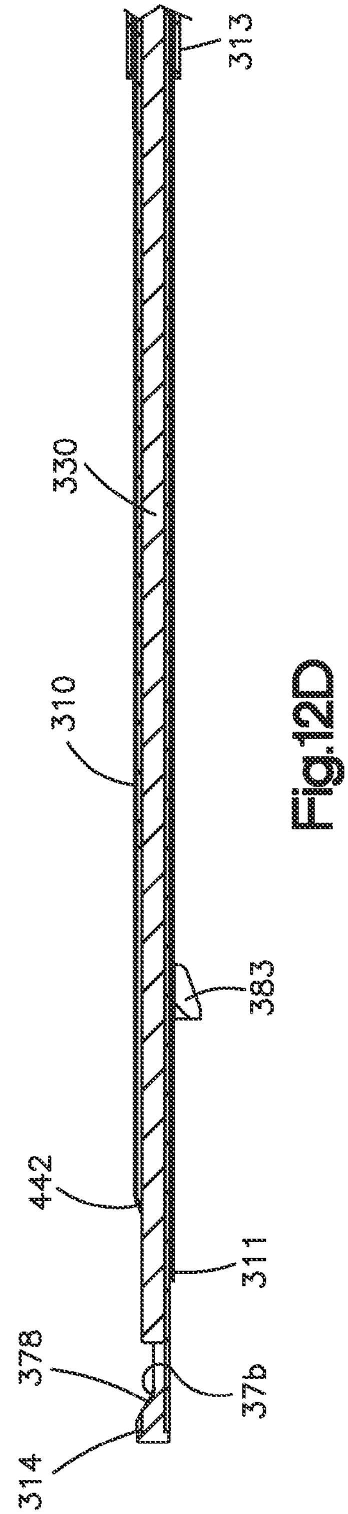
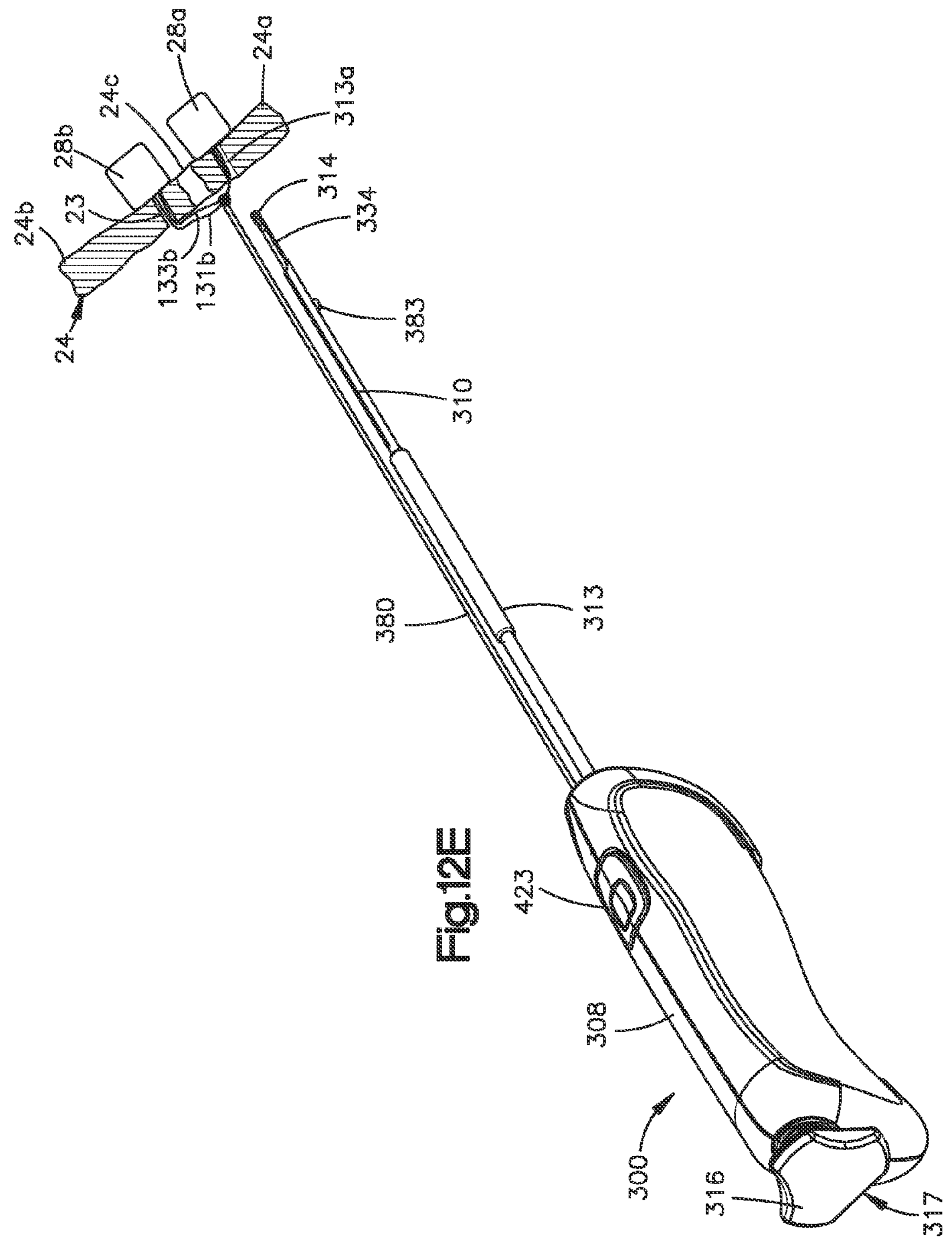


Fig.12D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313a
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300
316
317

Fig.12E

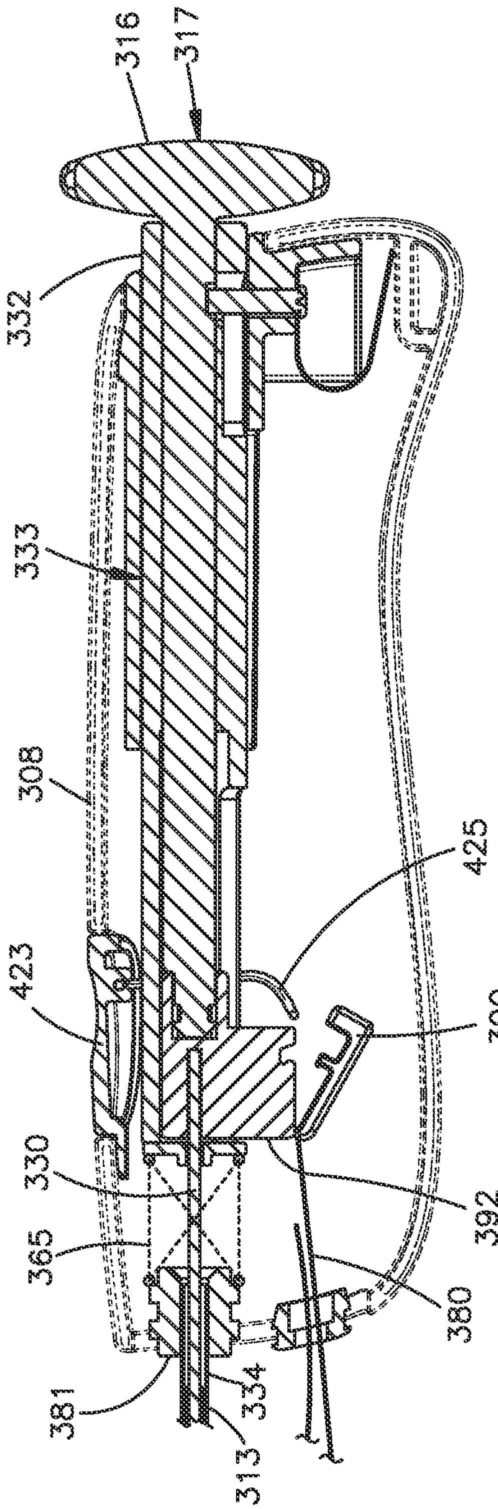
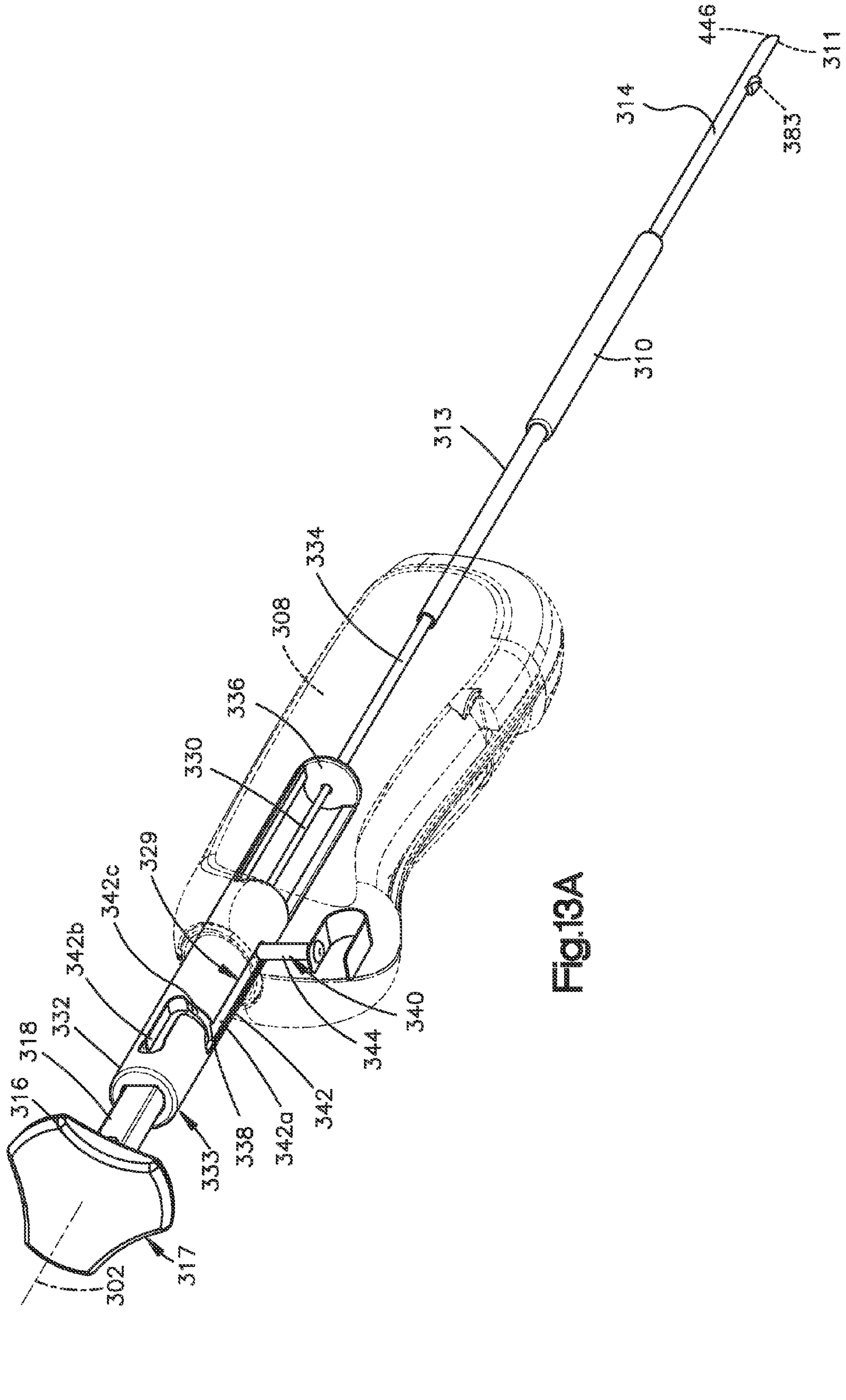


Fig.12F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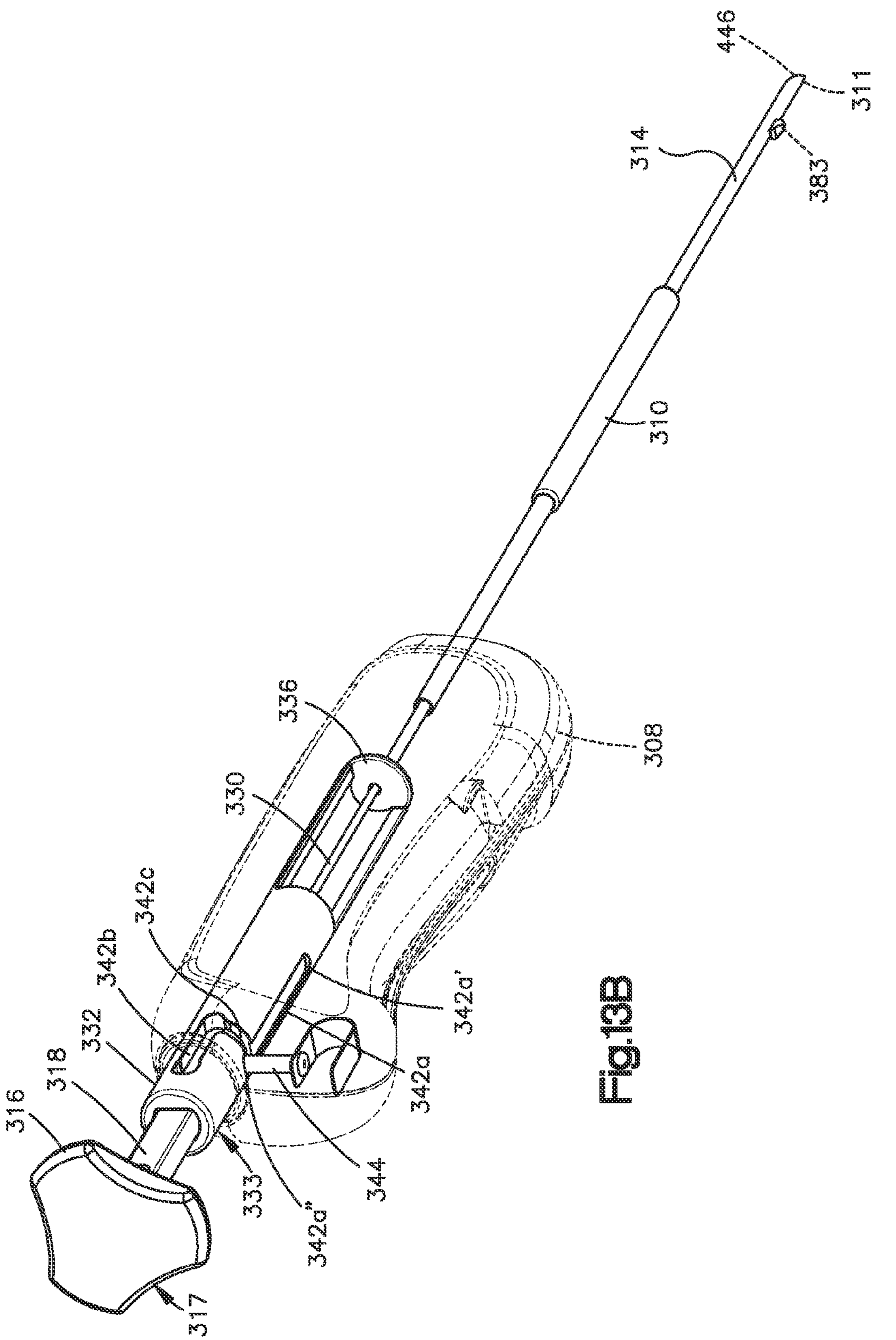
317
302

Fig.13A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311
314
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342c
342b
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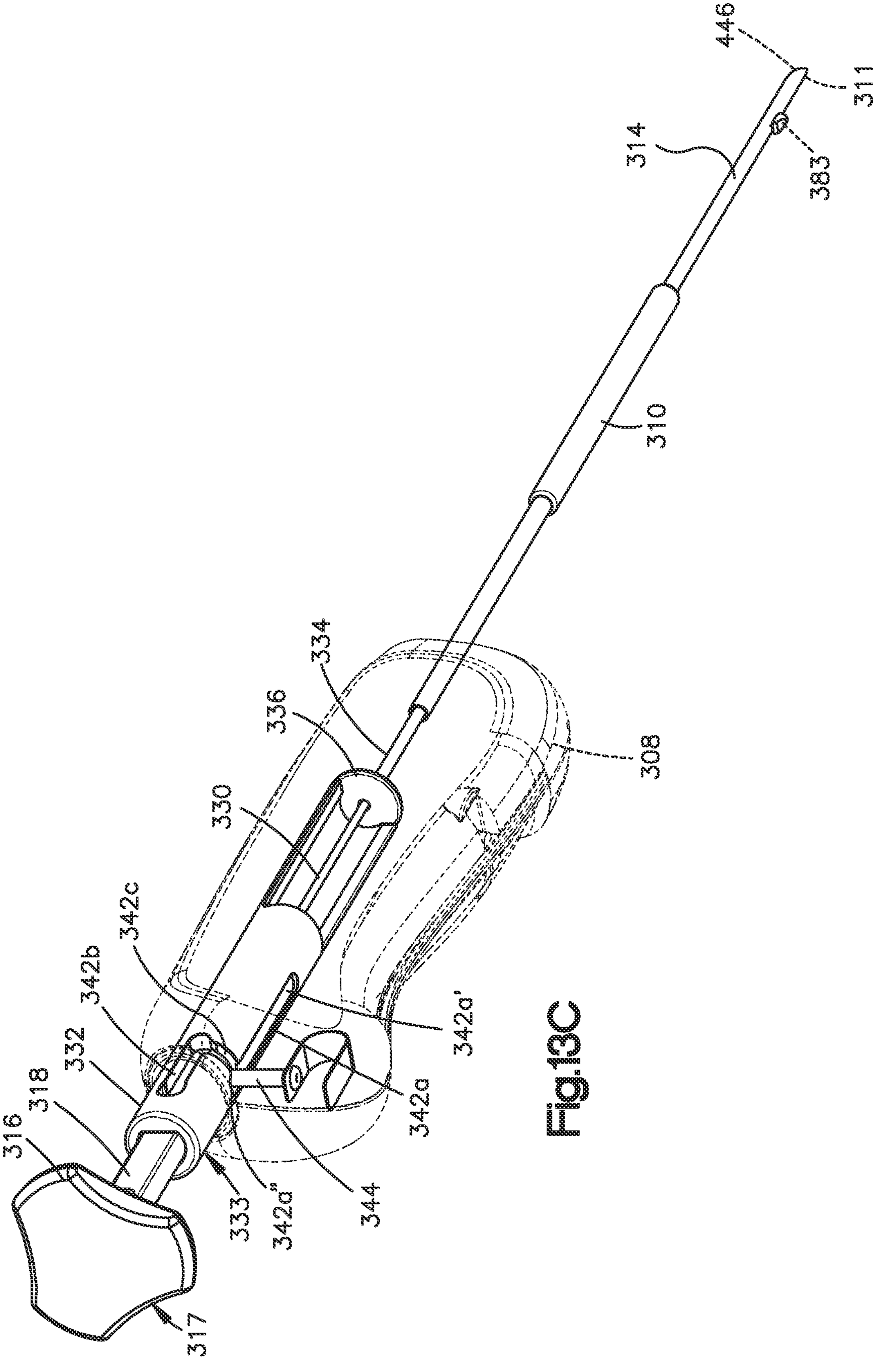
318
316
342a'
342a
344
333
342a"
317

Fig.13B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342a'
342a
344
342a''
333
317

Fig.13C

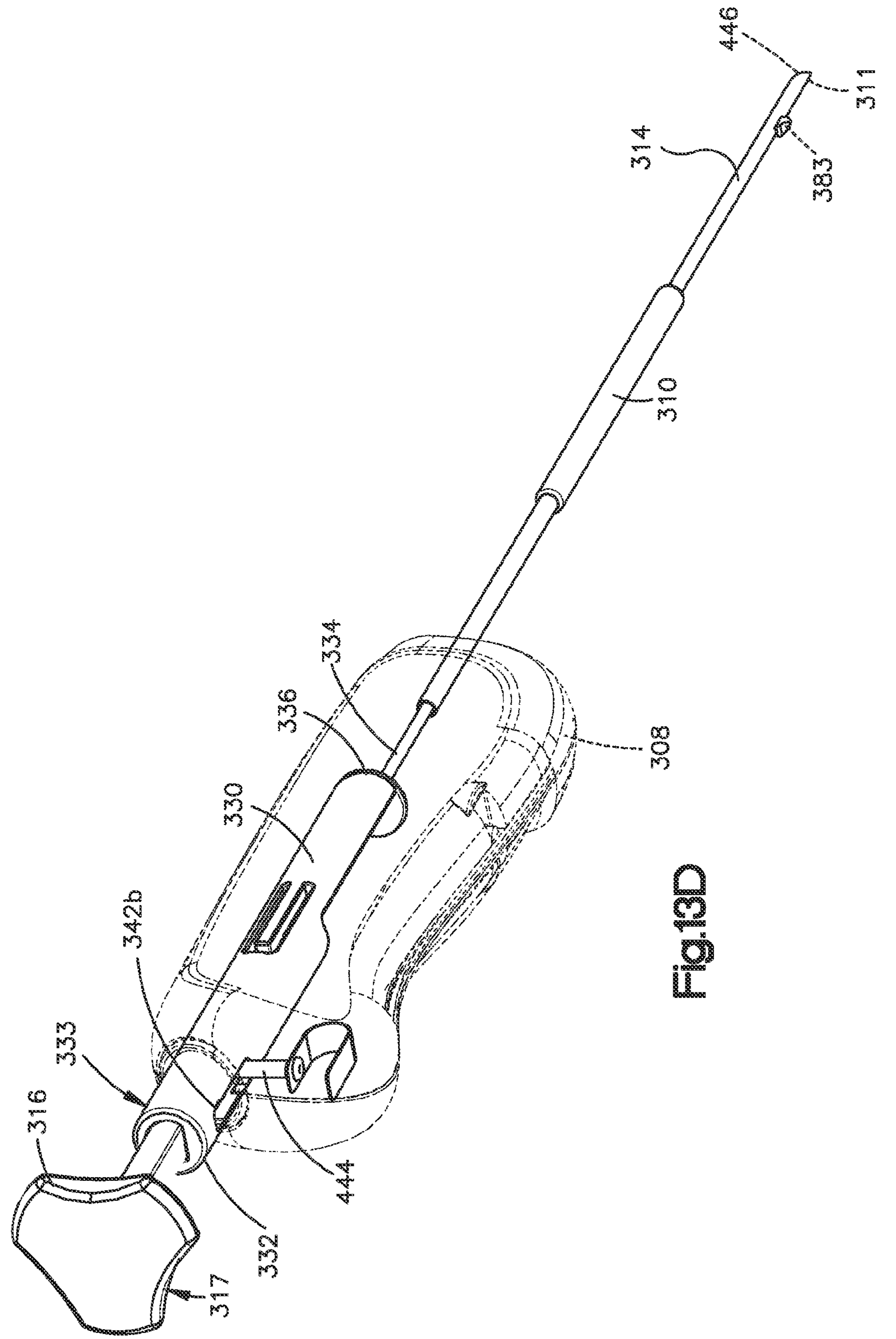
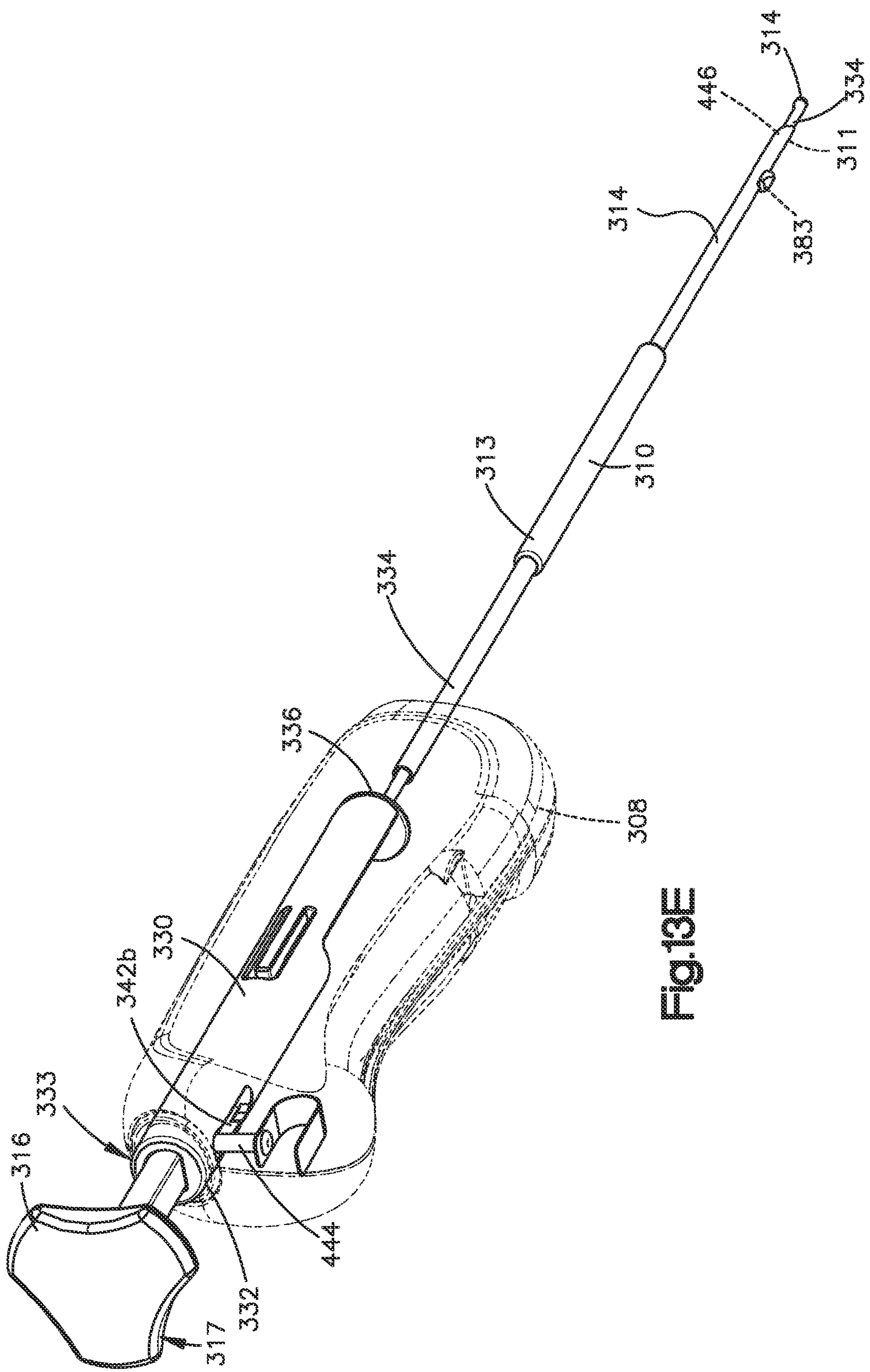


Fig.13D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342b
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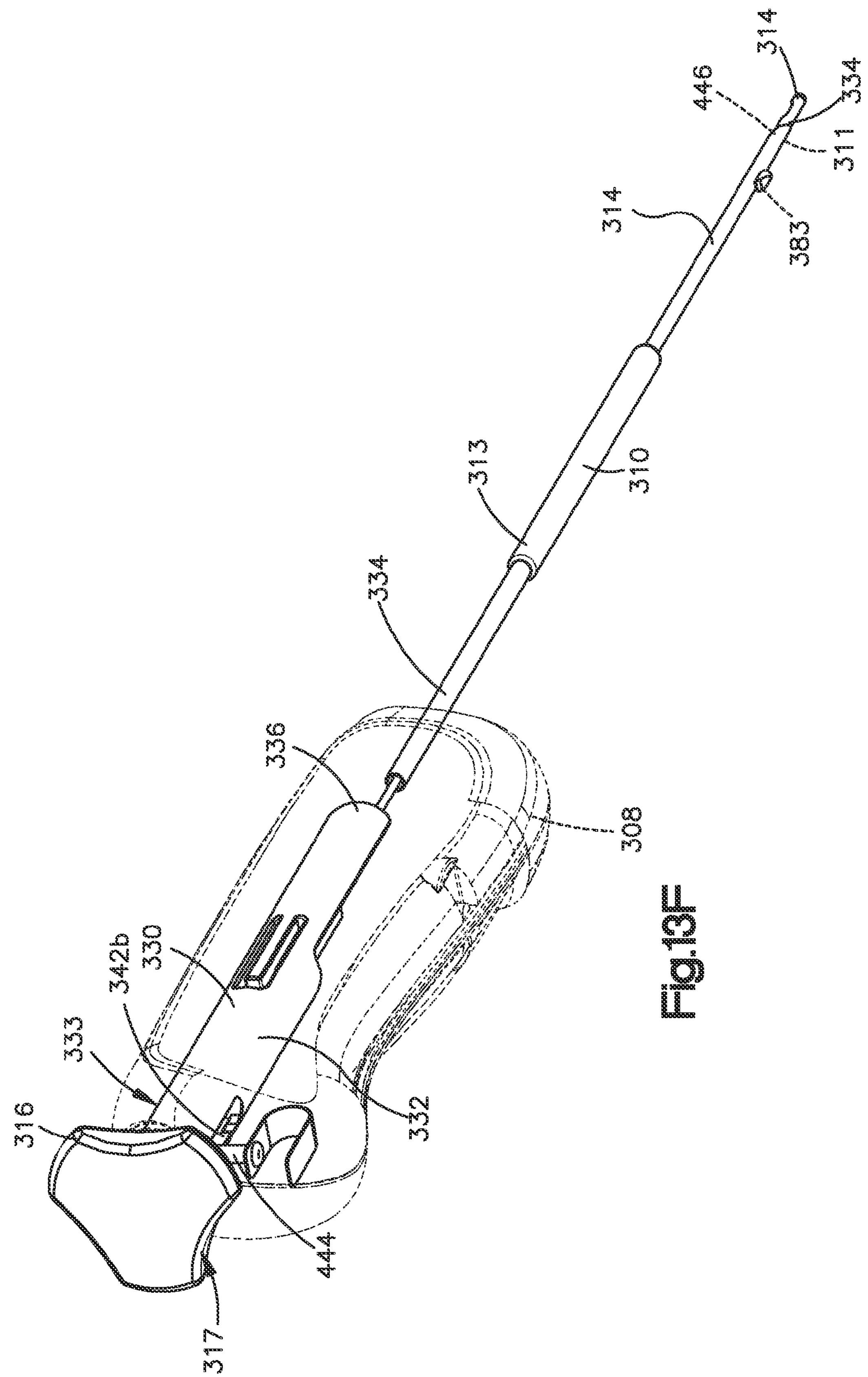
444
332
317

Fig.13E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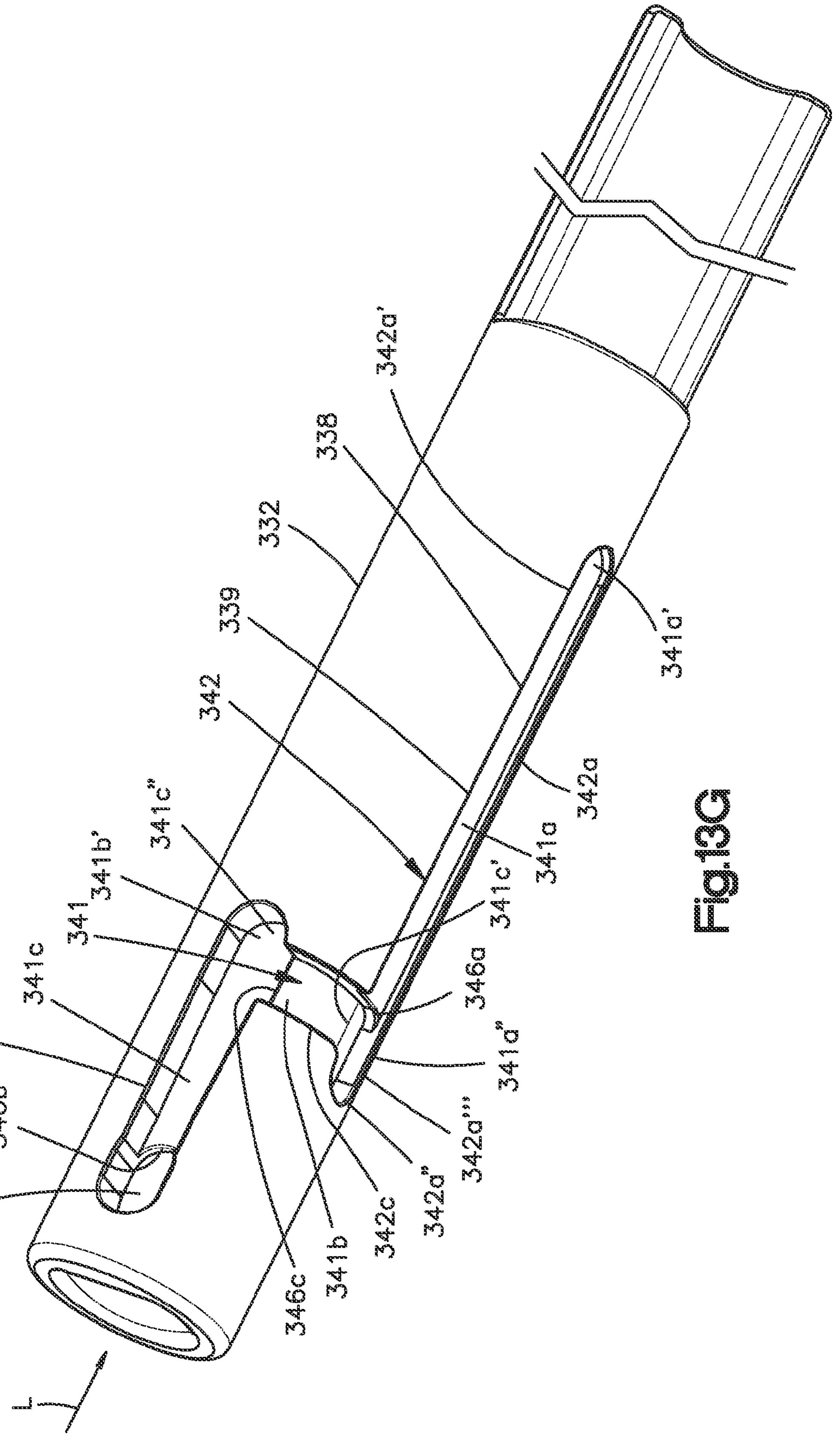
317

Fig.13F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341b'
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341c'
346a
341a"
342a'''
342a"
342c
341b
346c
L

Fig.13G

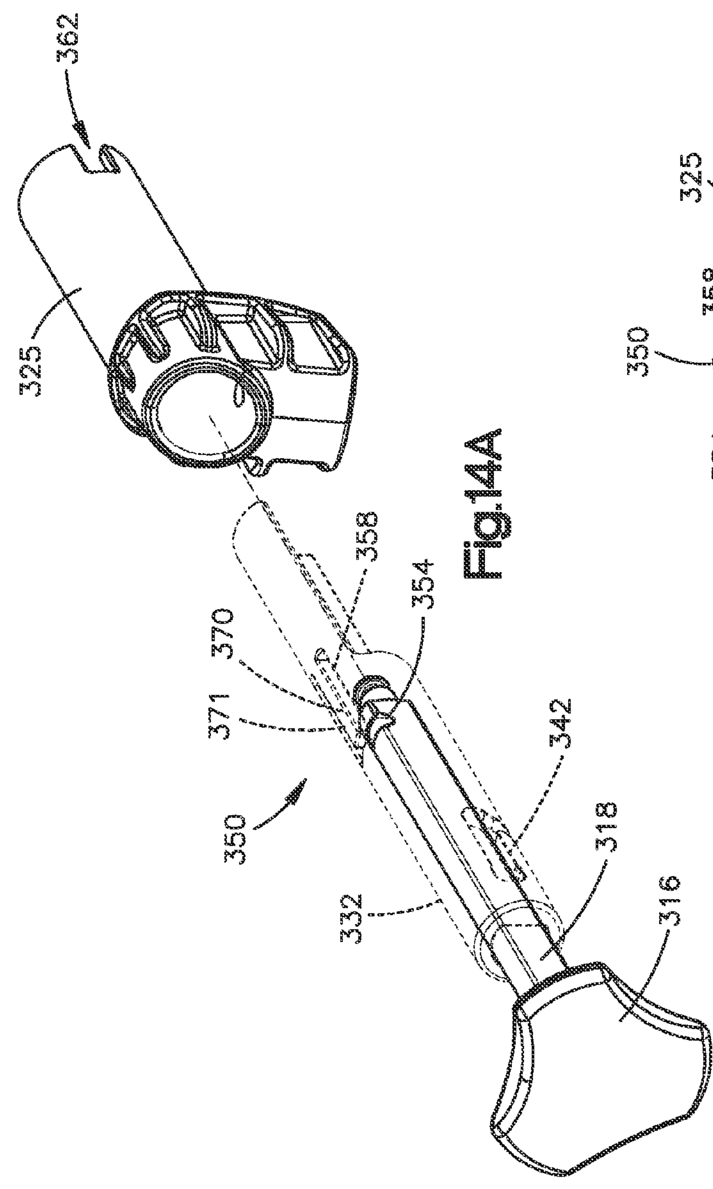


Fig.14A

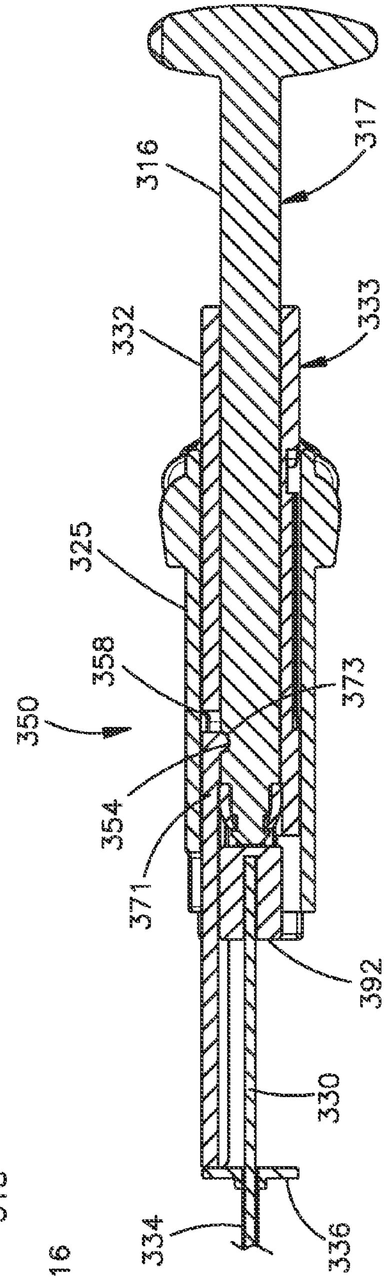


Fig.14B

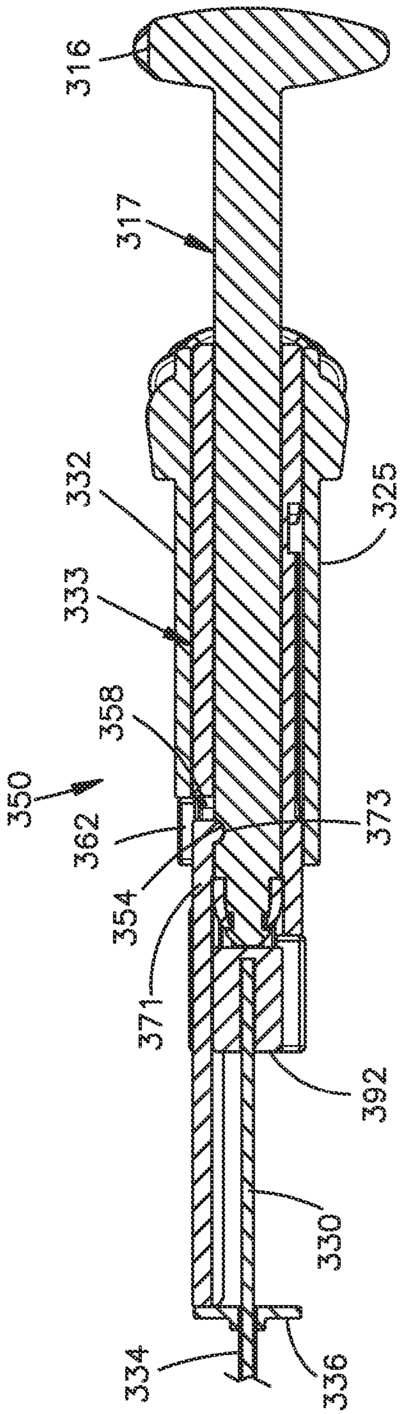


Fig.14C

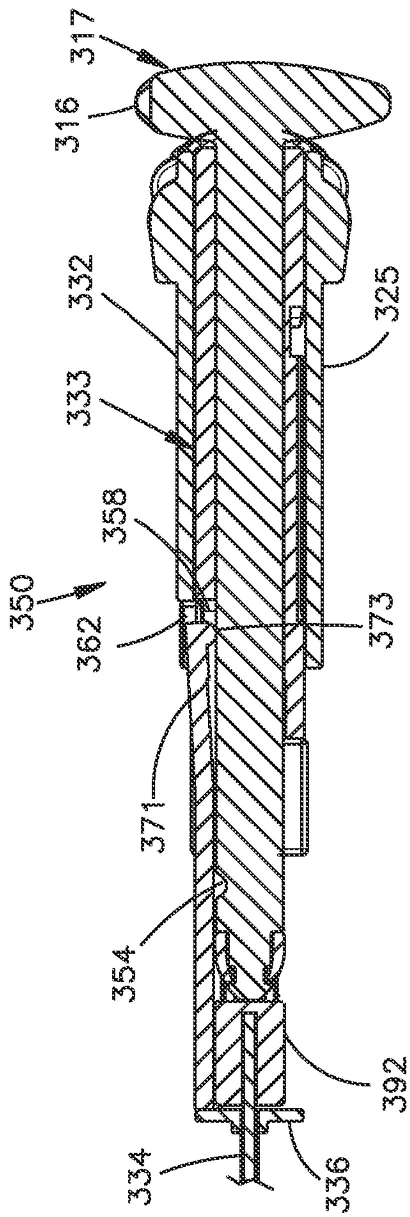


Fig.14D

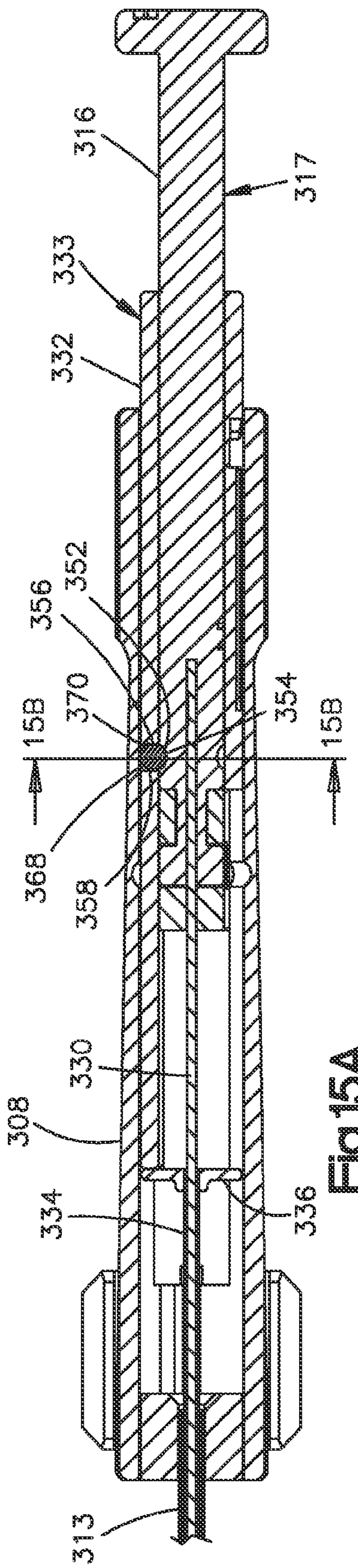


Fig.15A

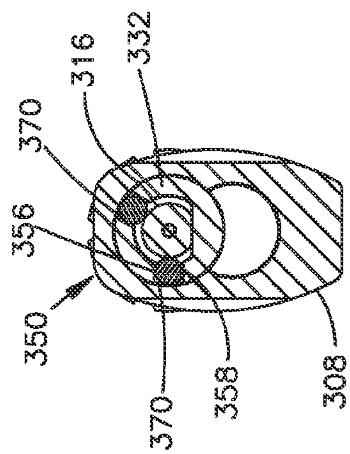


Fig.15B

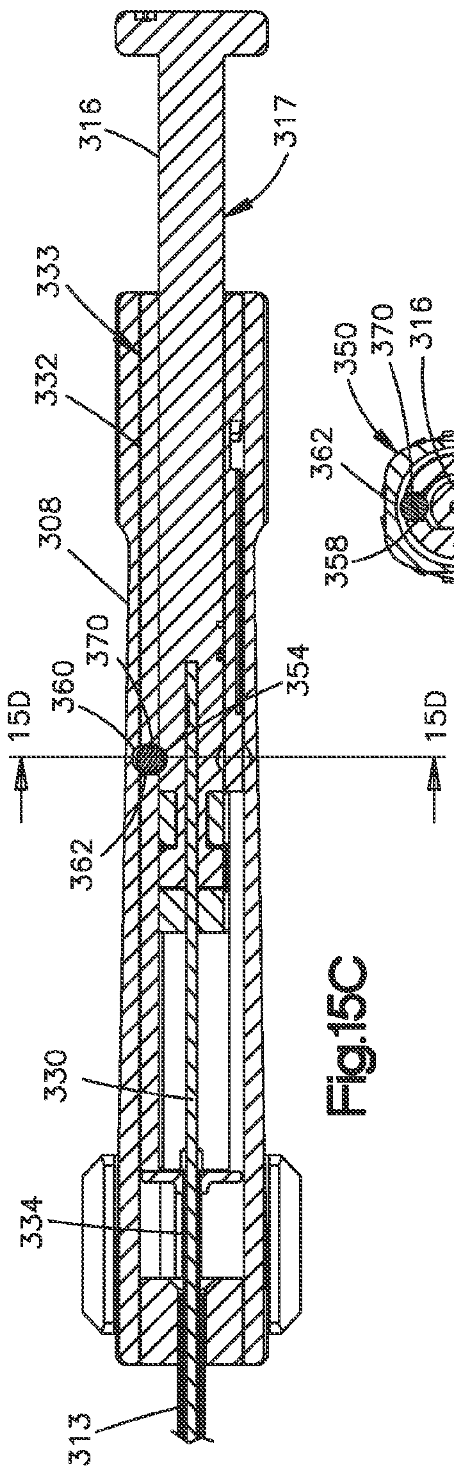


Fig.15C

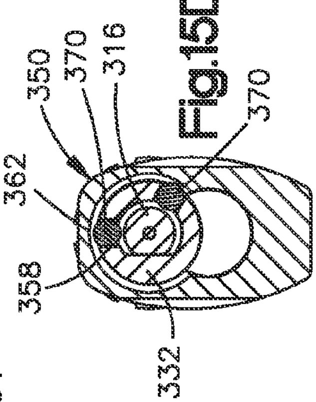


Fig.15D

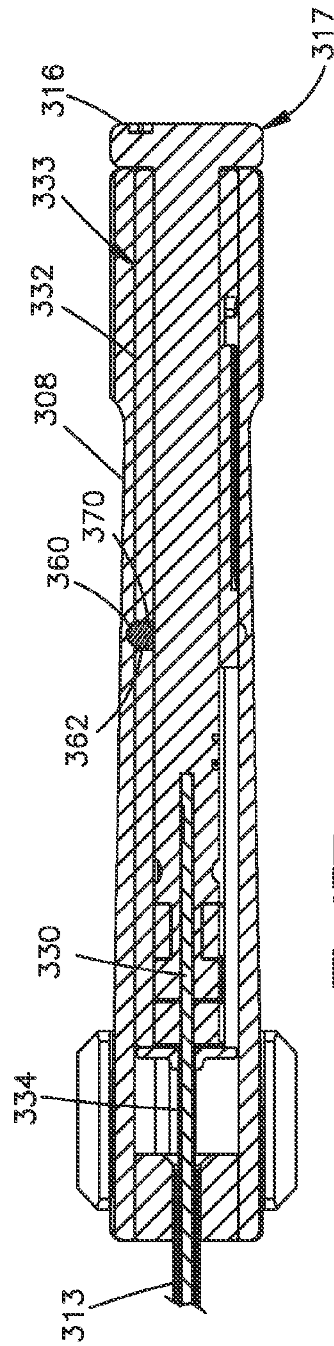


Fig.15E

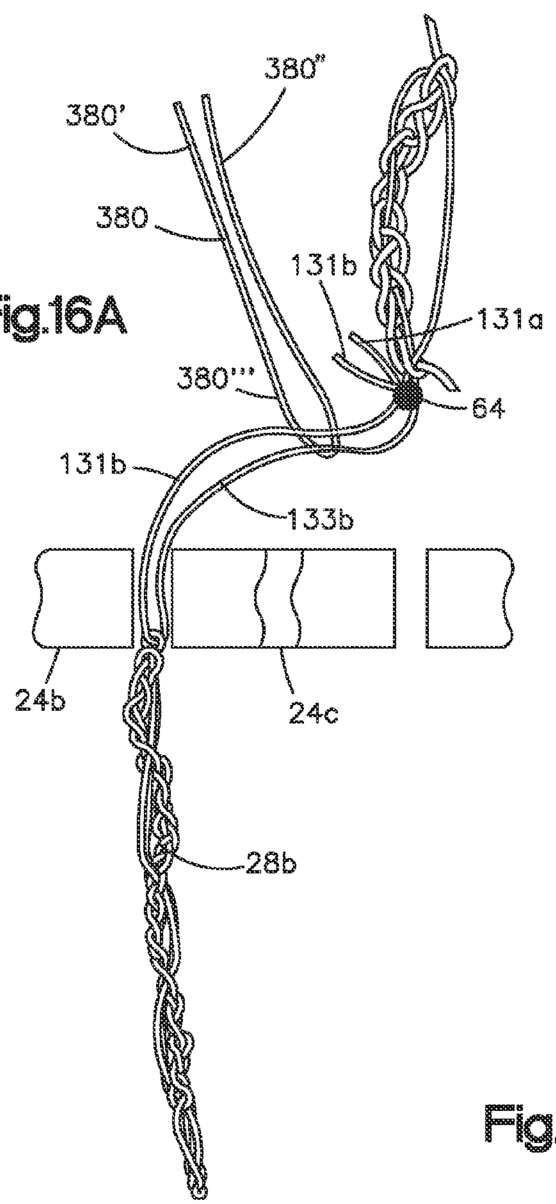


Fig.16A

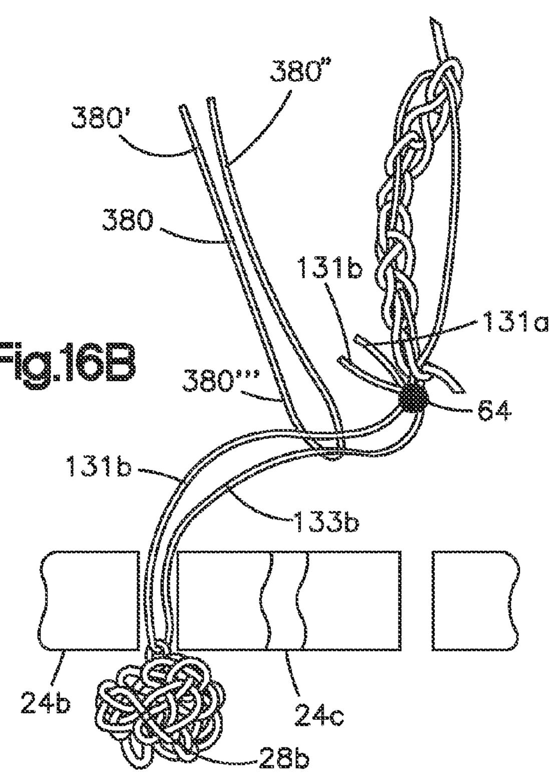


Fig.16B

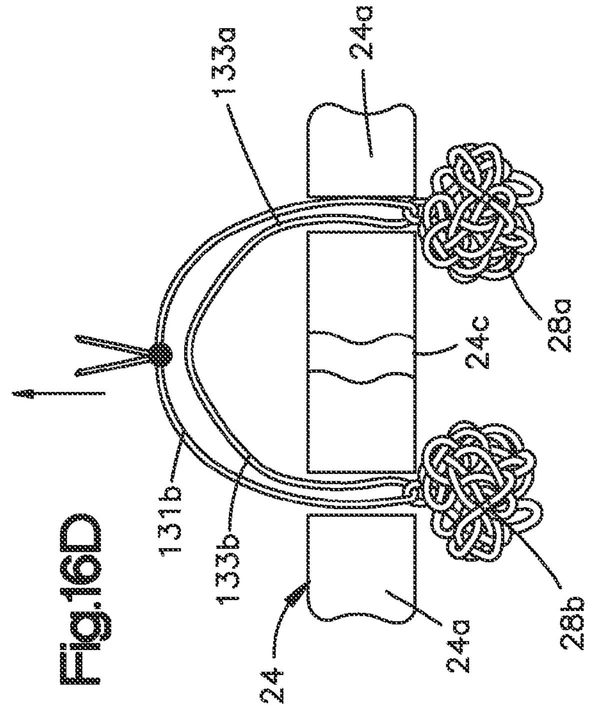


Fig.16D

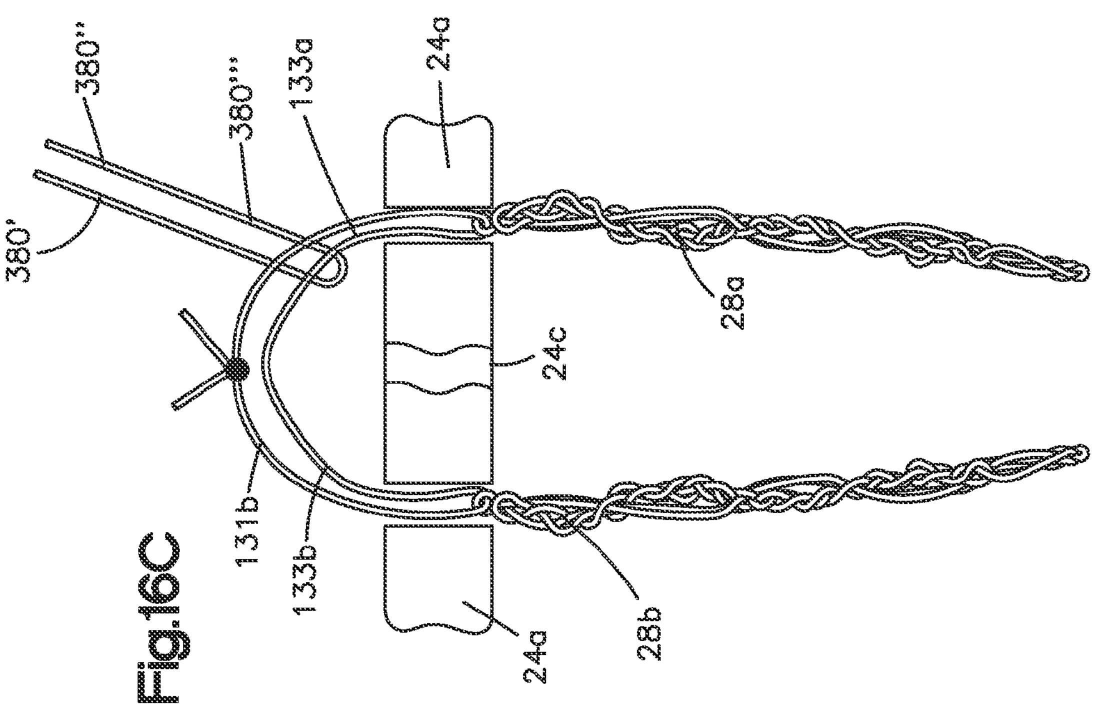


Fig.16C

Fig.16F

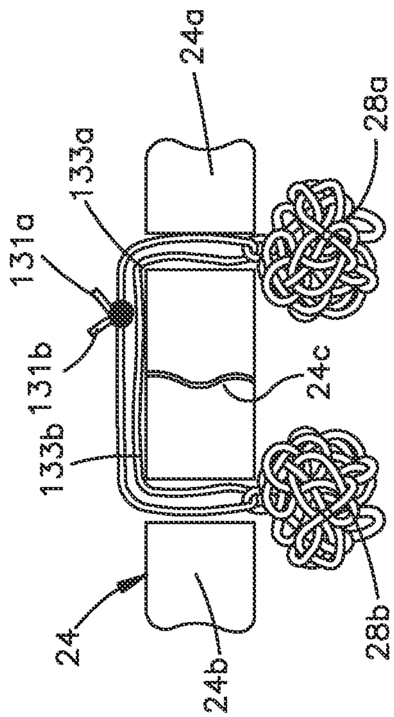
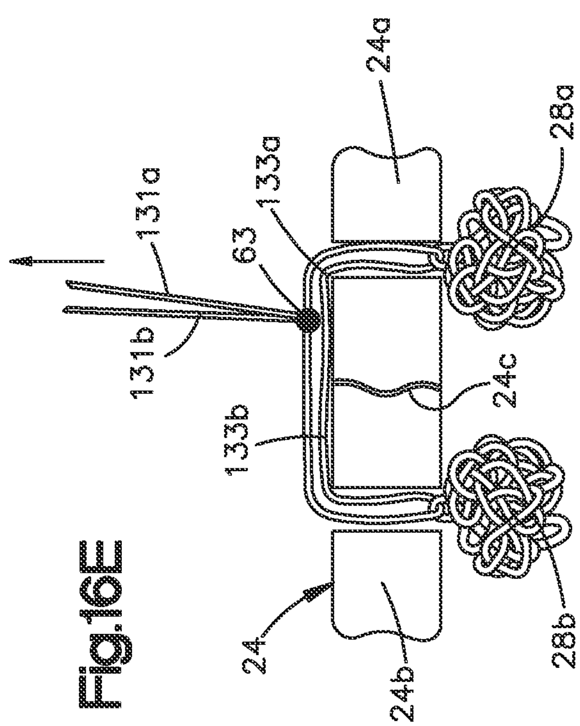
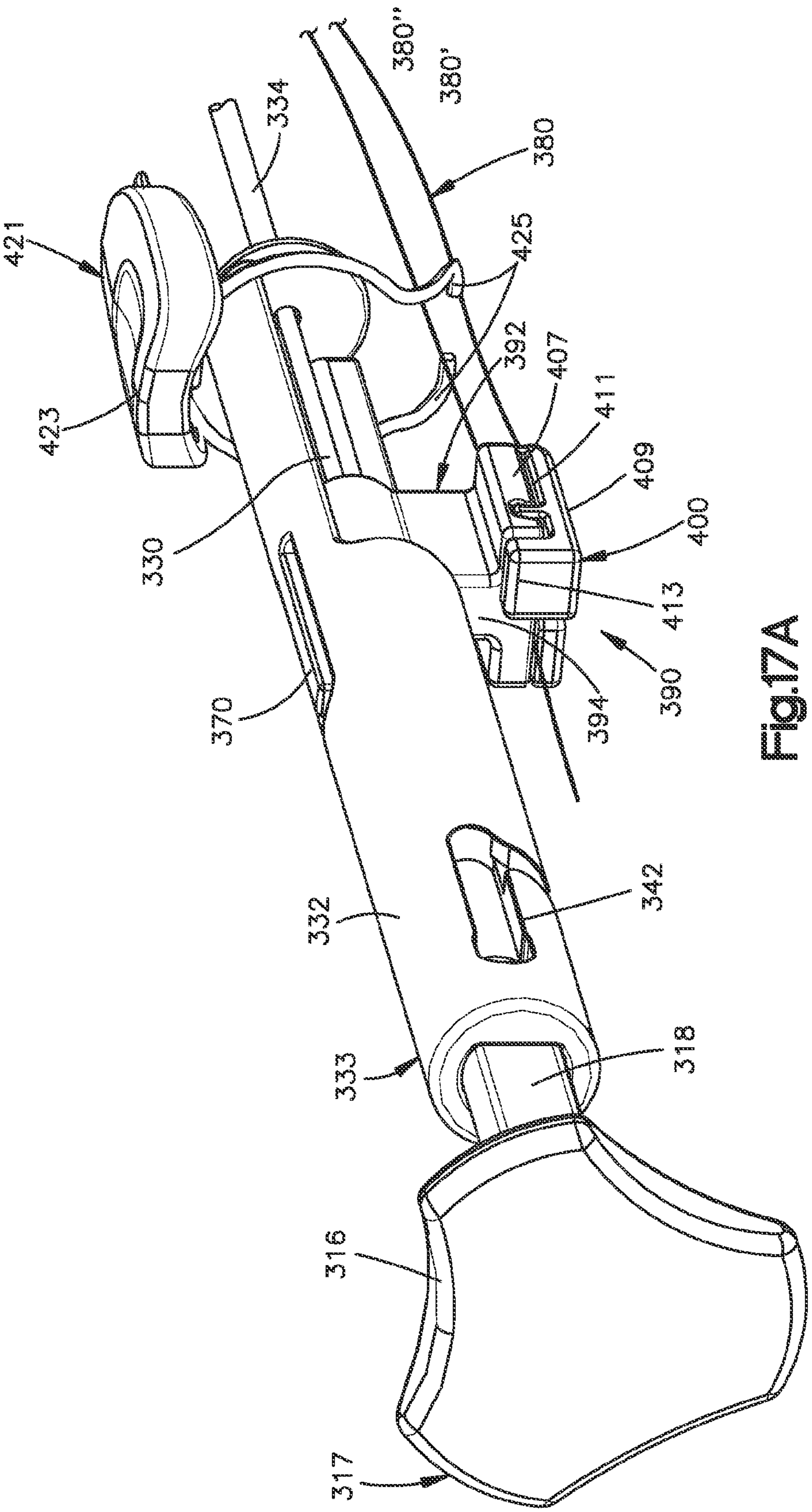


Fig.16E

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334
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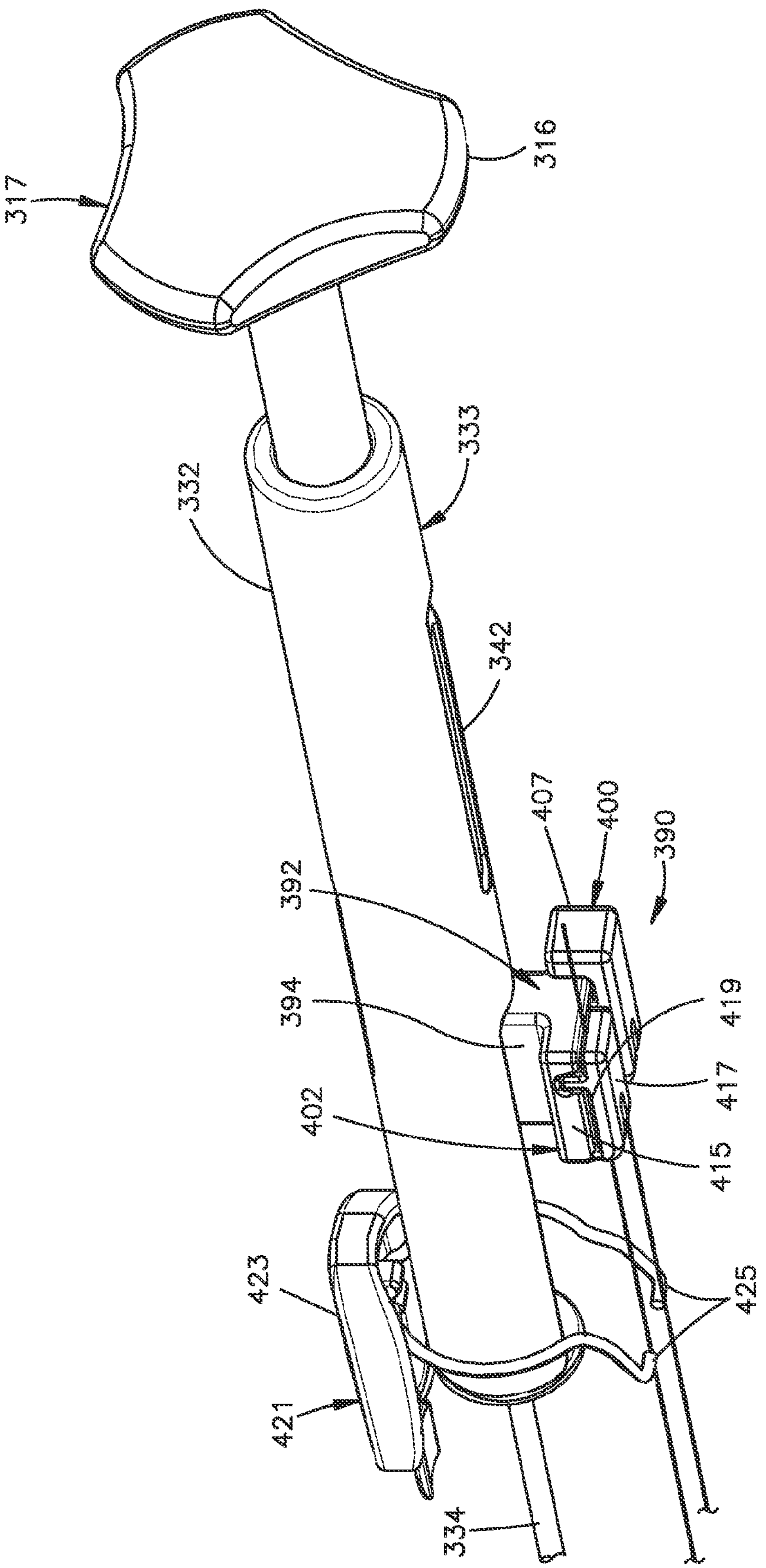
316
317

Fig.17A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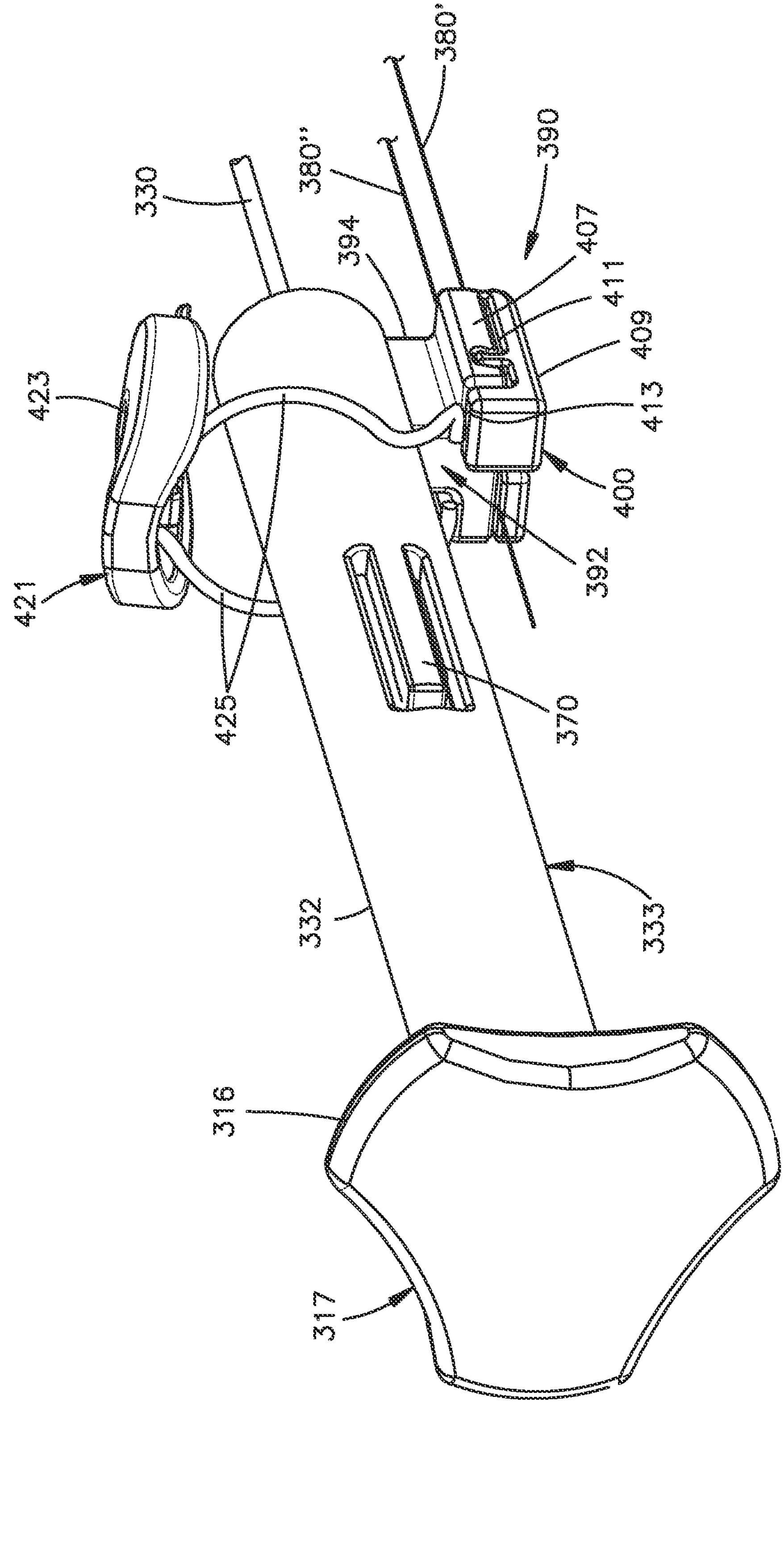
334

Fig.17B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316
317

Fig.17C

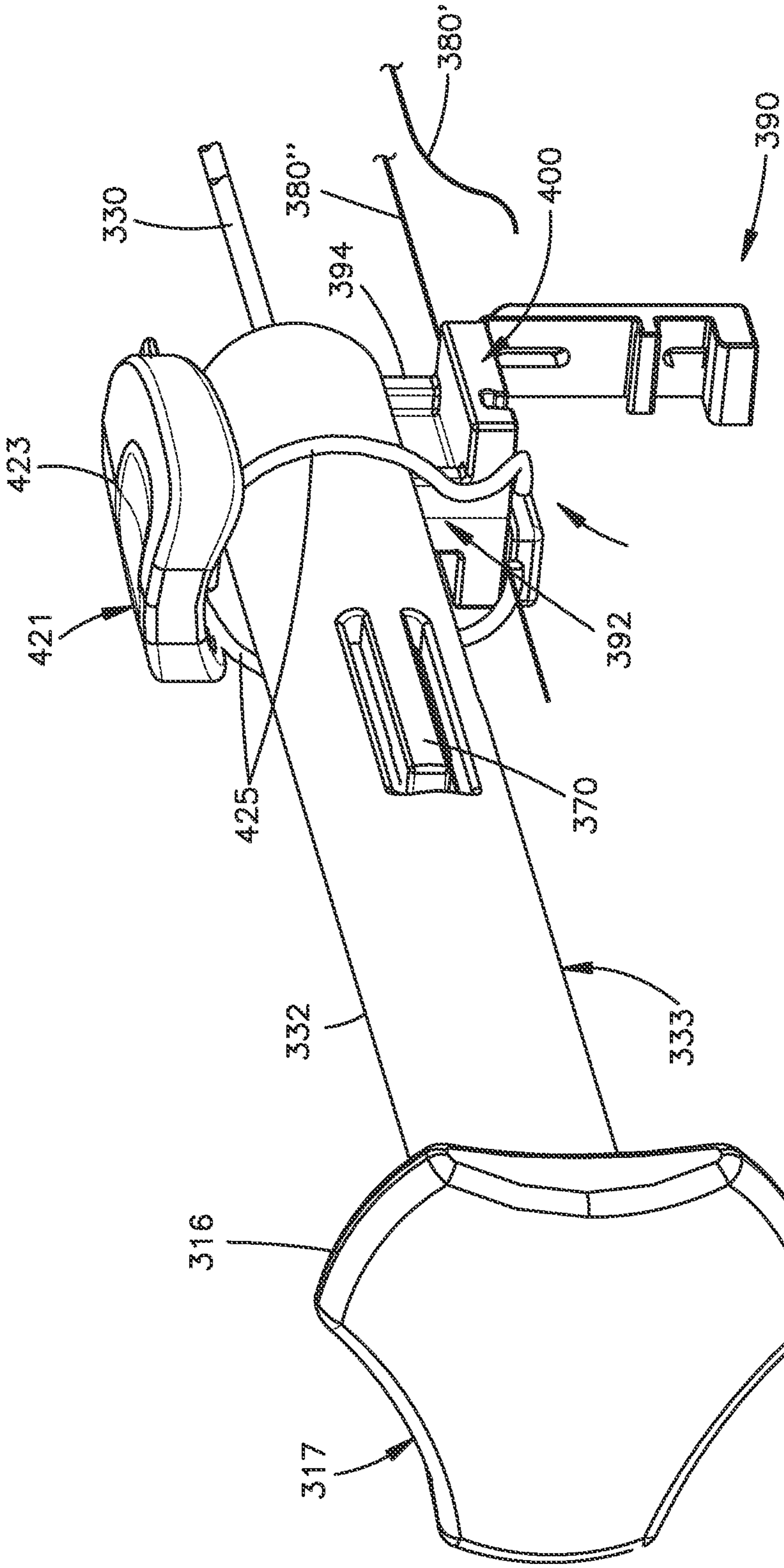


Fig.17D

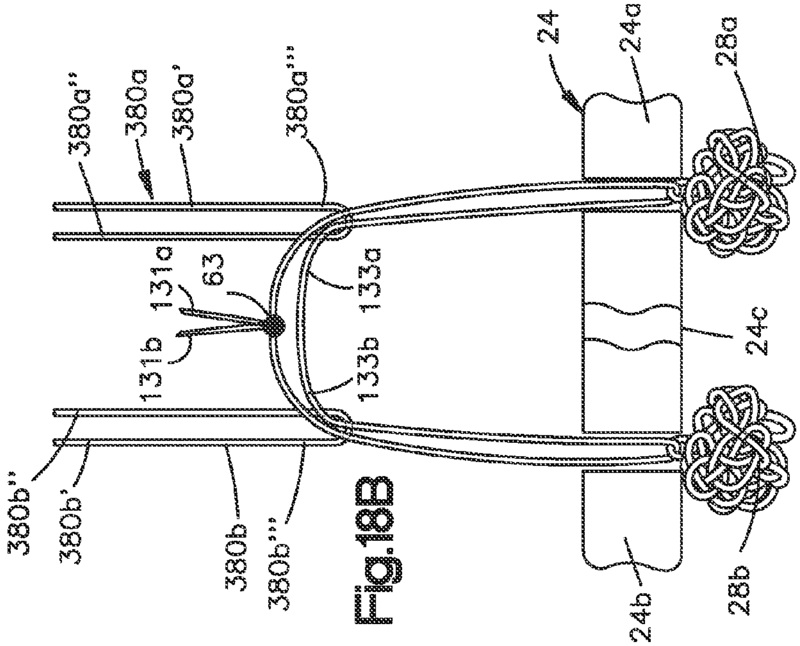


Fig.18B

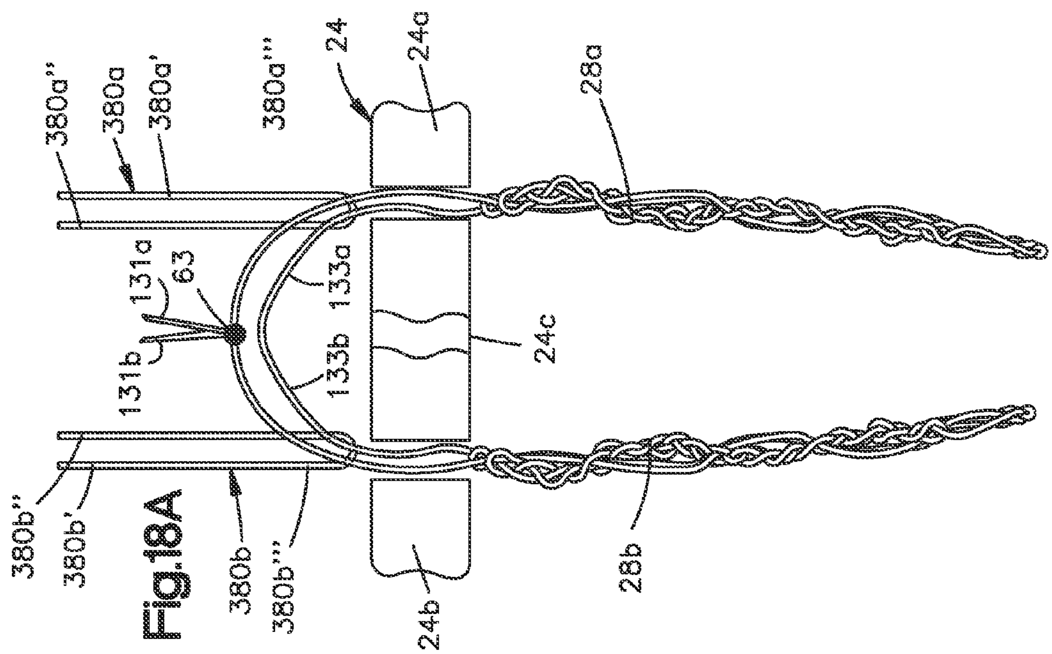


Fig.18A

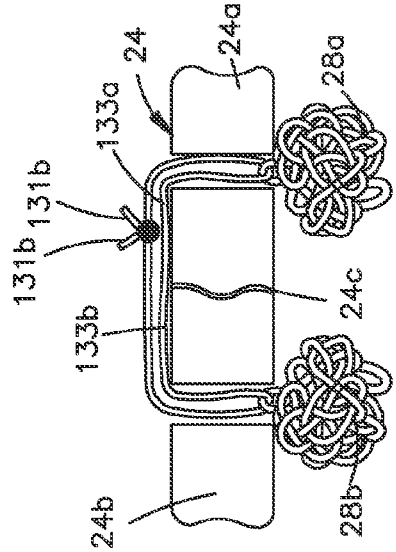


Fig.18E

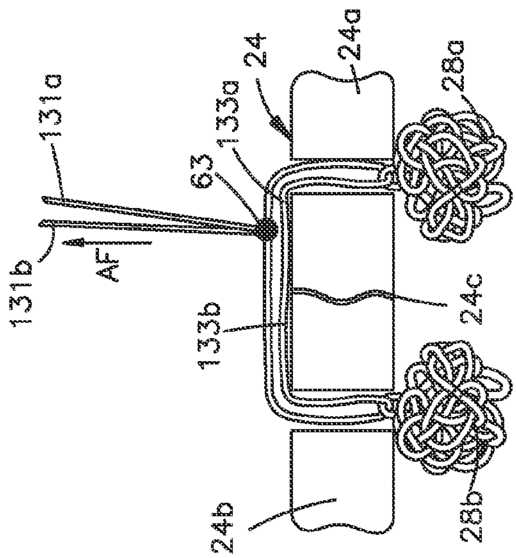


Fig.18D

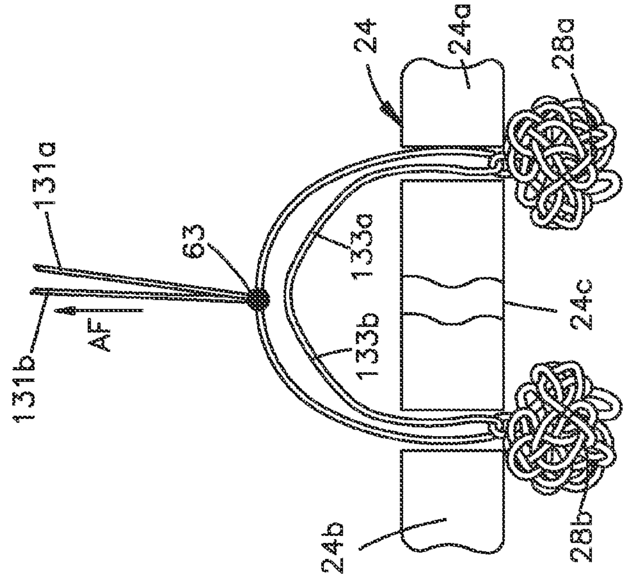


Fig.18C

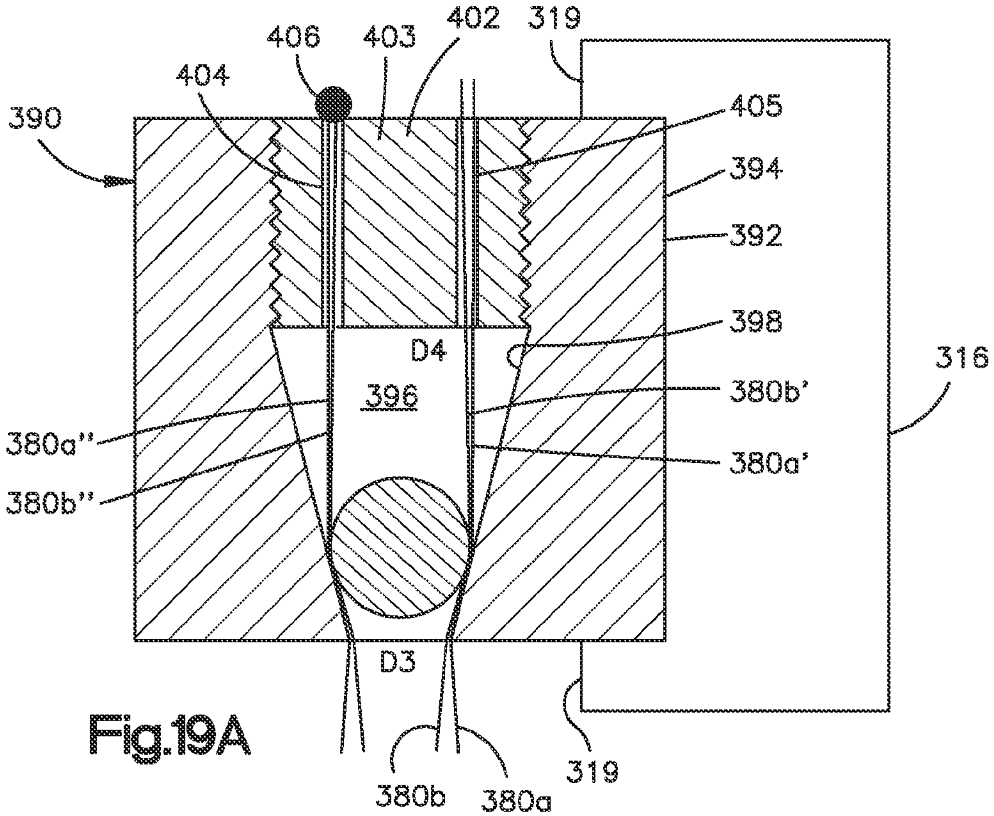


Fig.19A

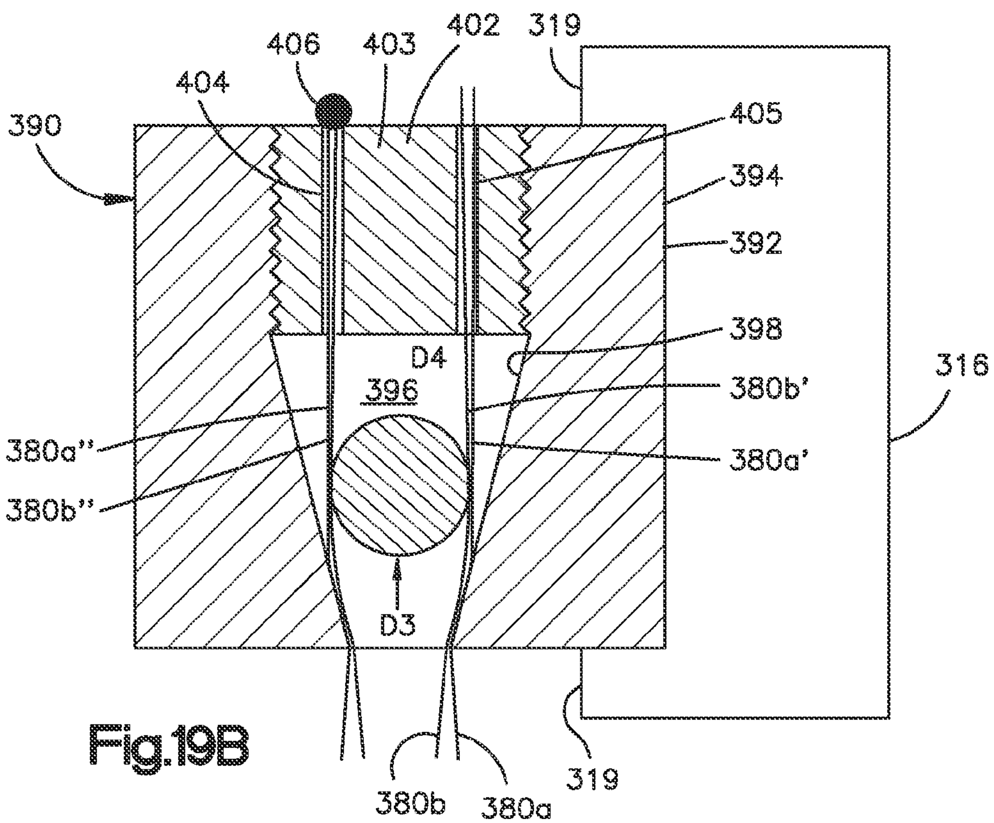
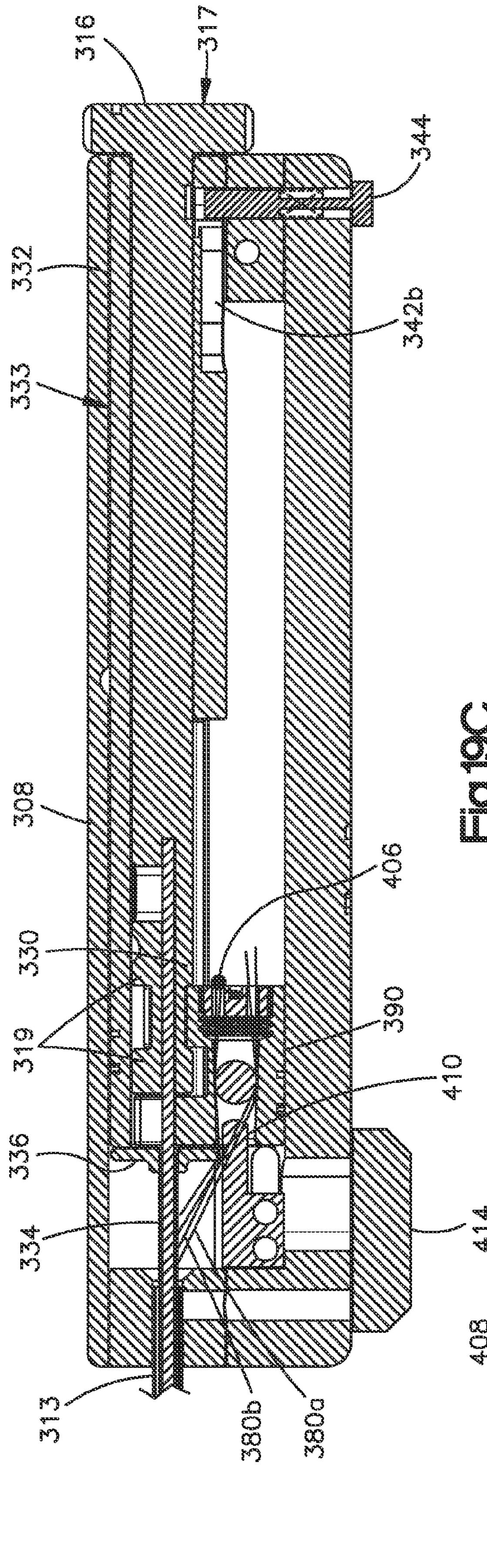


Fig.19B


316
317
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334
414
408
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380b
380a

Fig.19C

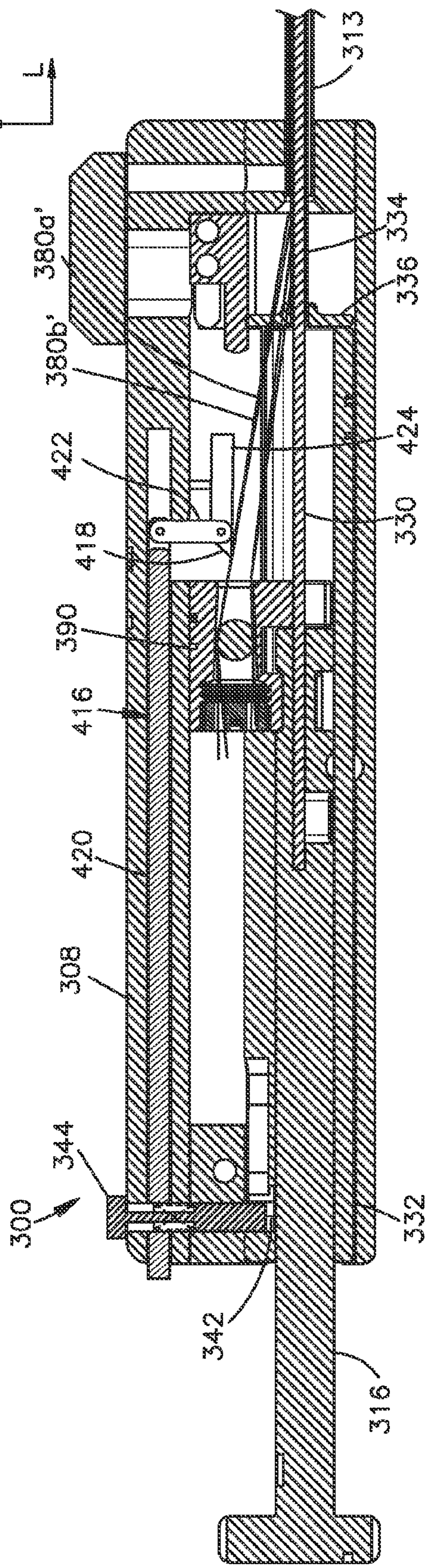


Fig.20A

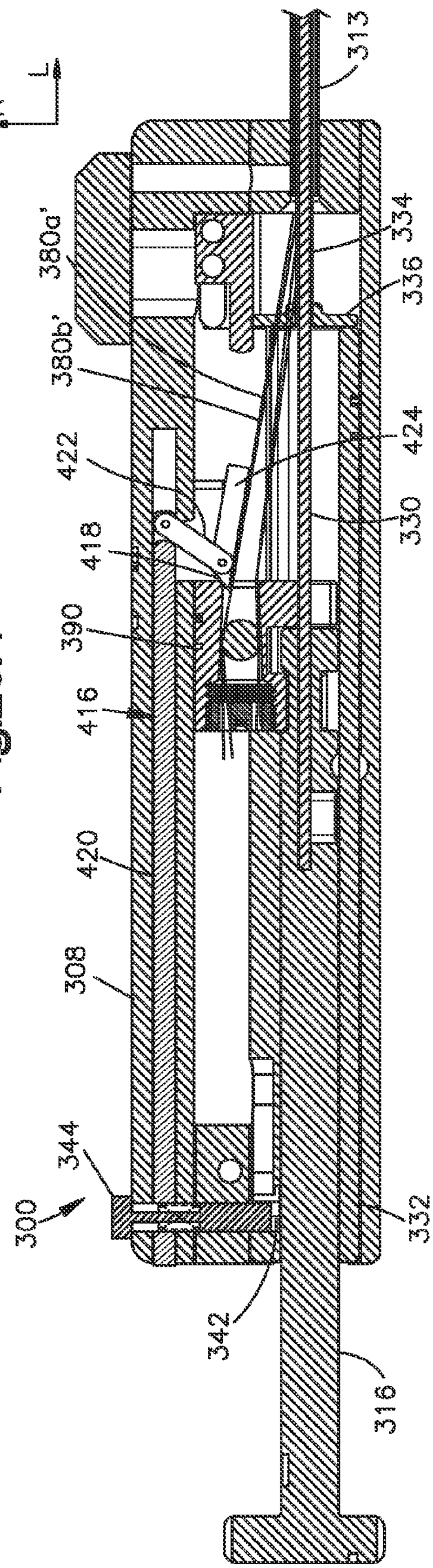


Fig.20B

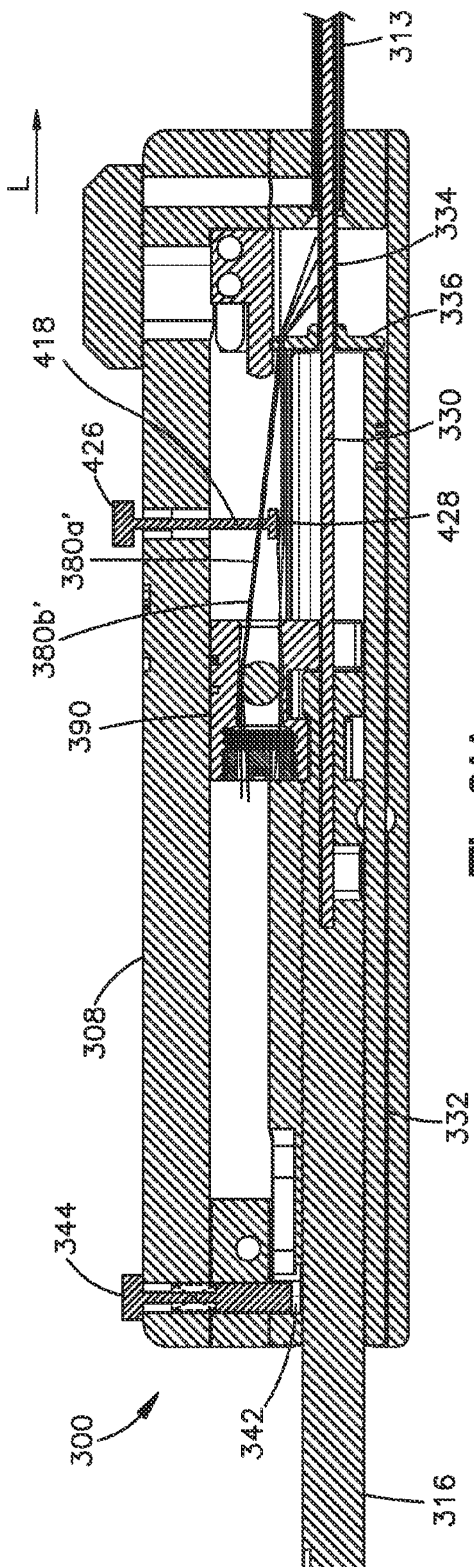


Fig.21A

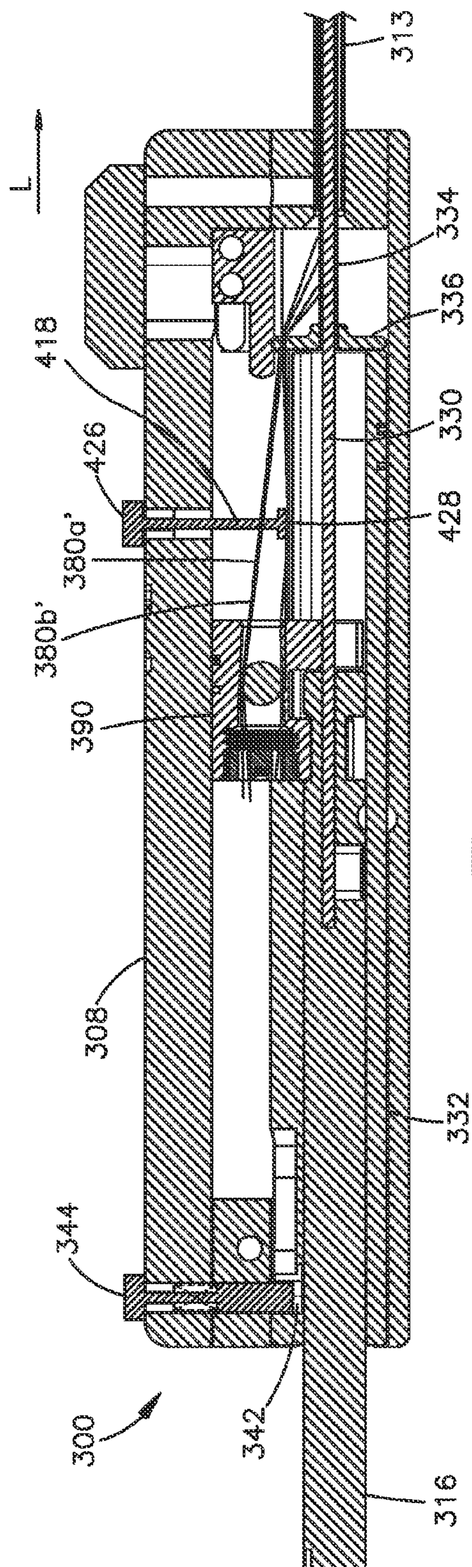


Fig.21B

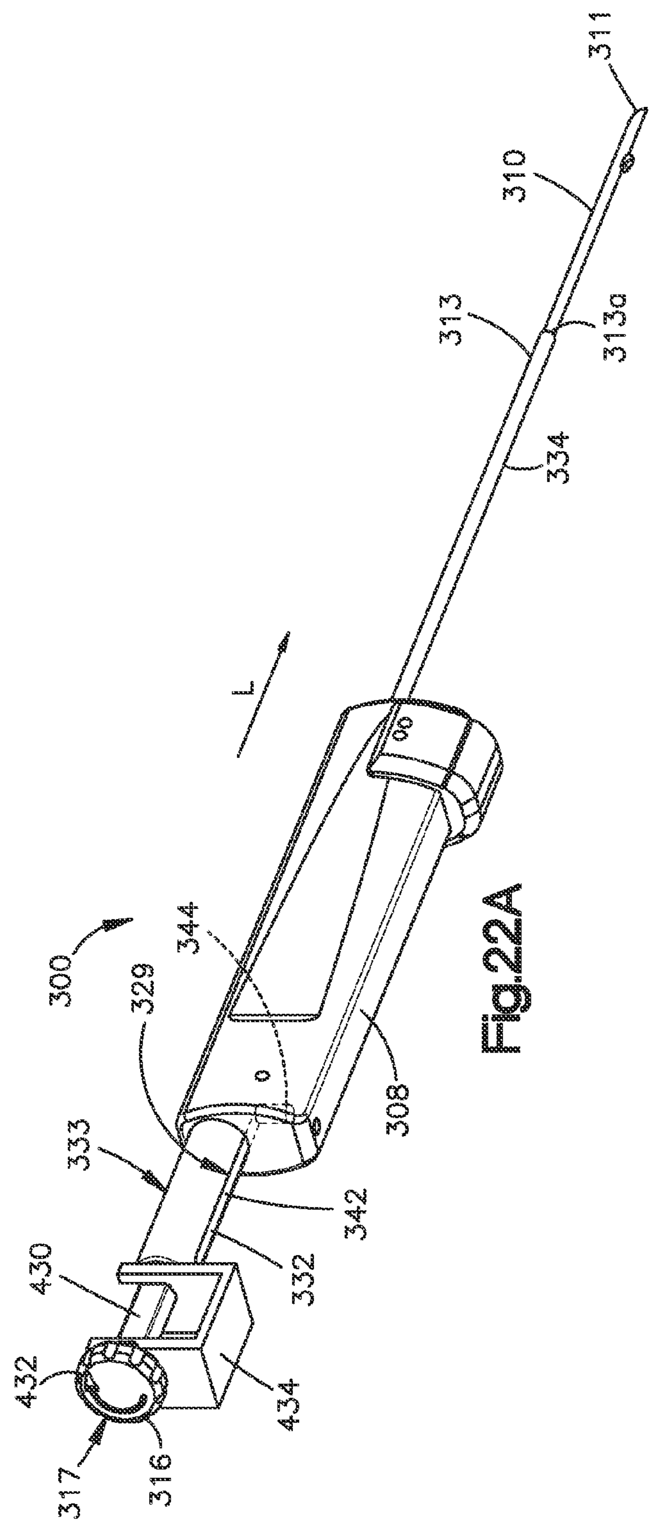


Fig.22A

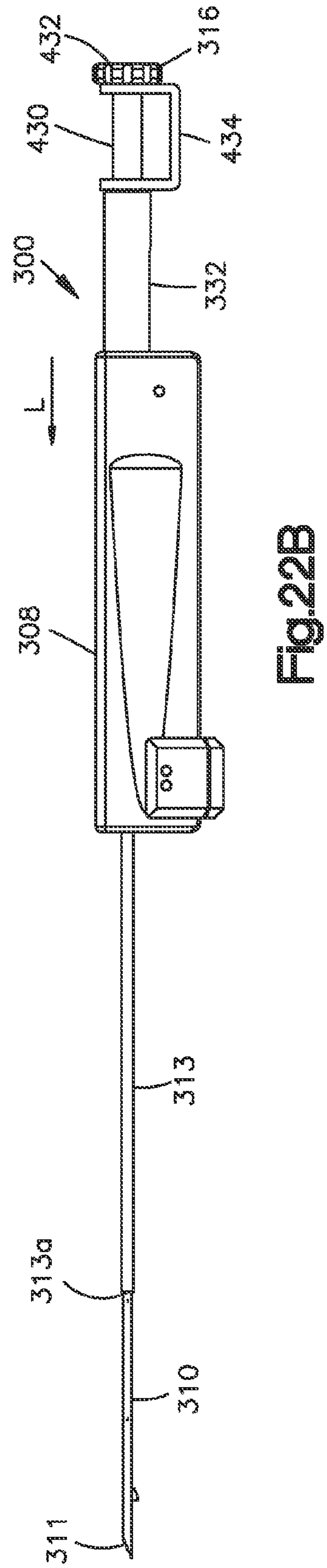


Fig.22B

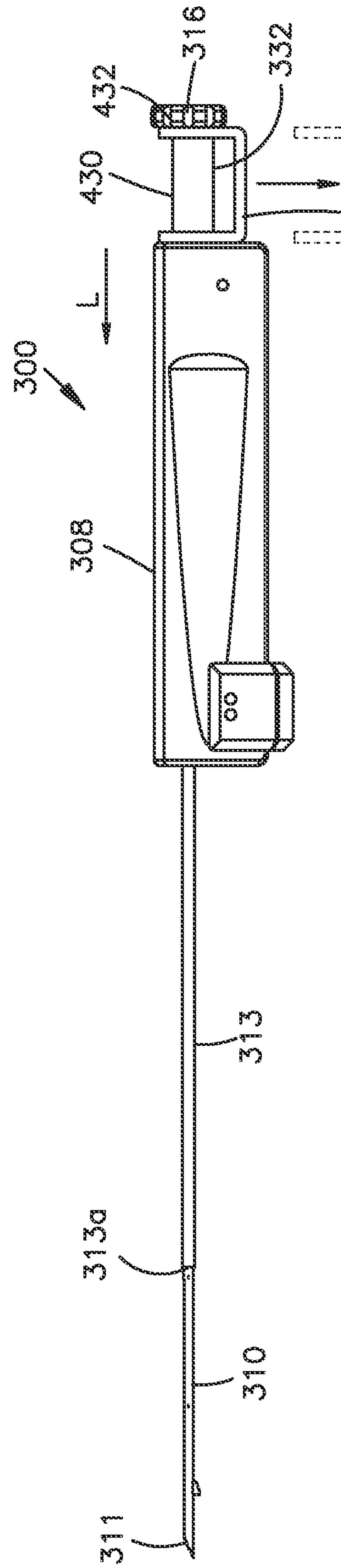


Fig.22C

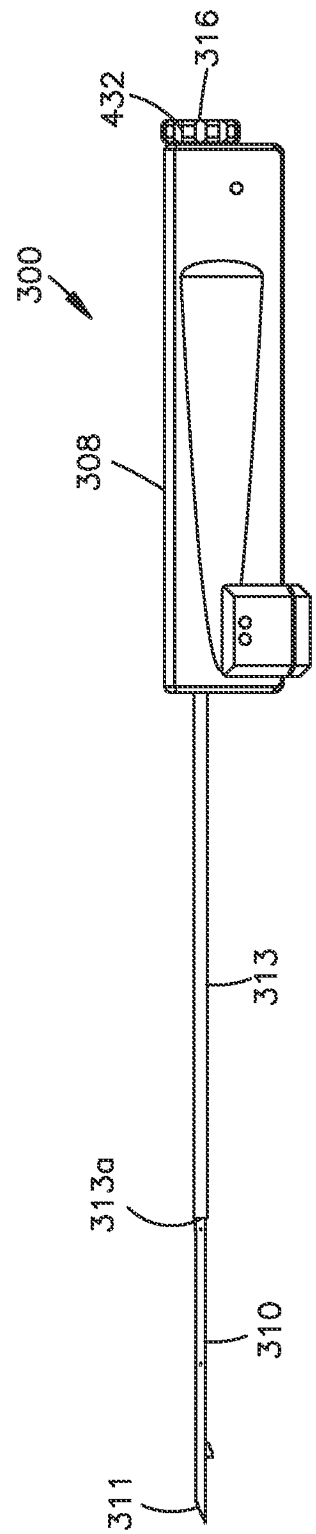
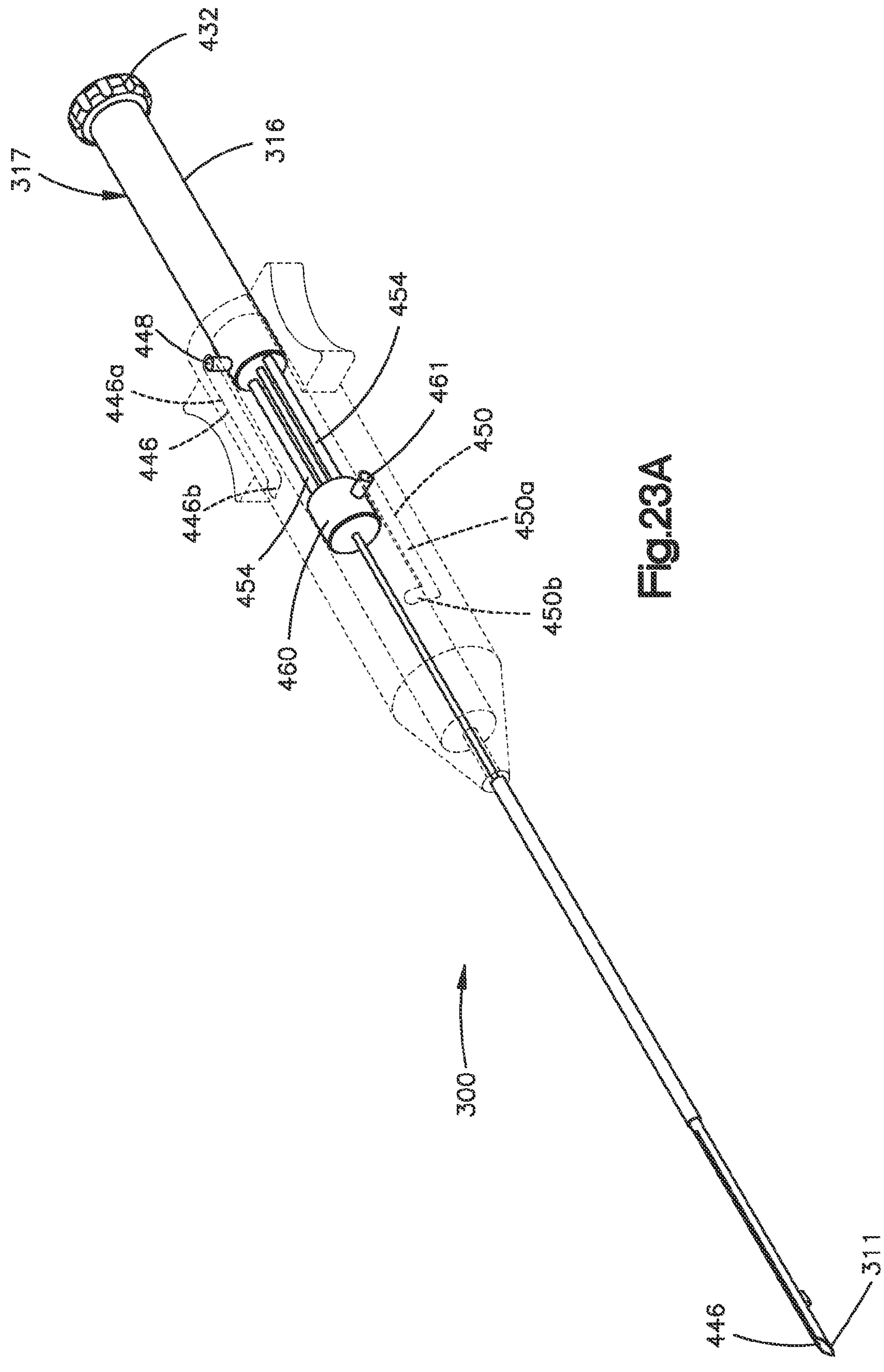


Fig.22D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446a
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446b
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454
450b
460
300
311
446

Fig.23A

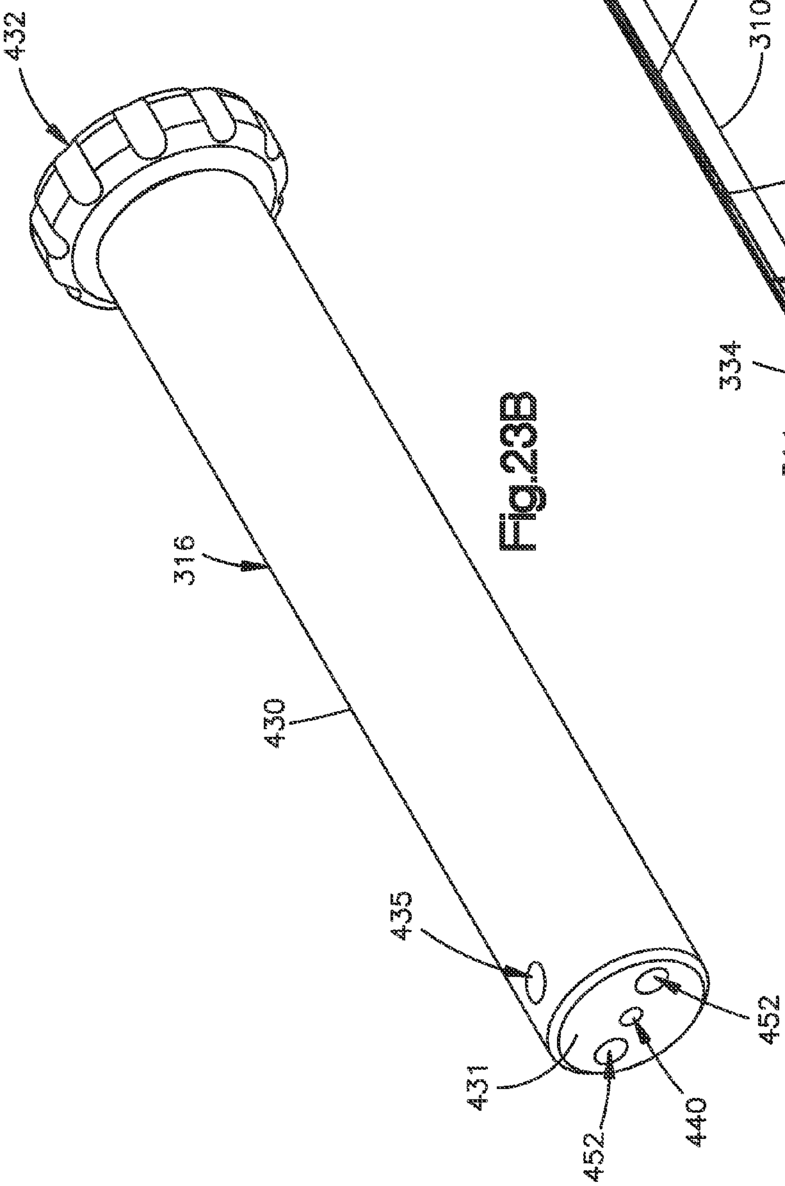


Fig.23B

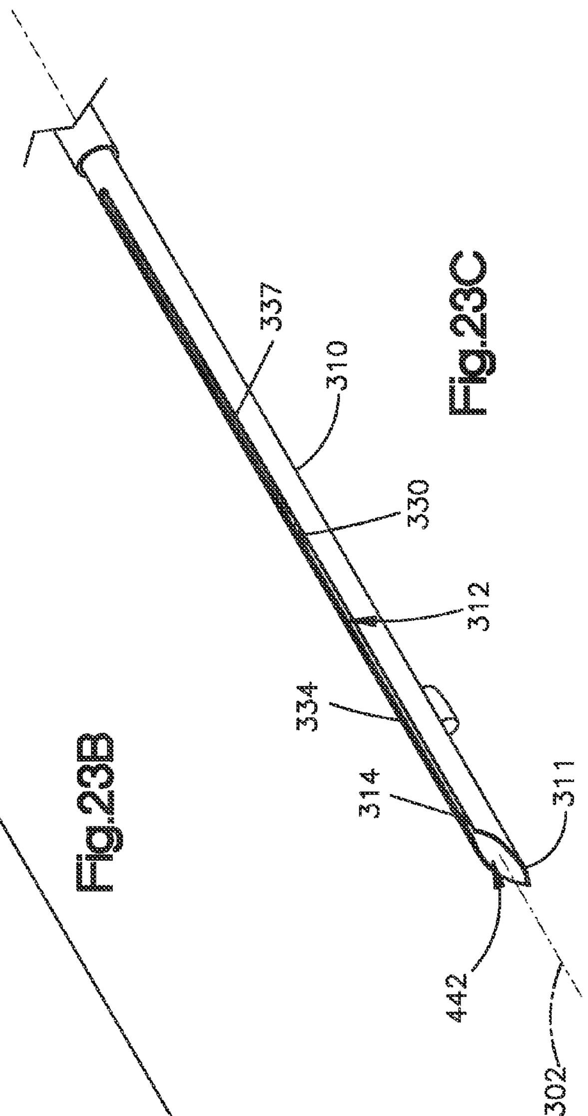


Fig.23C

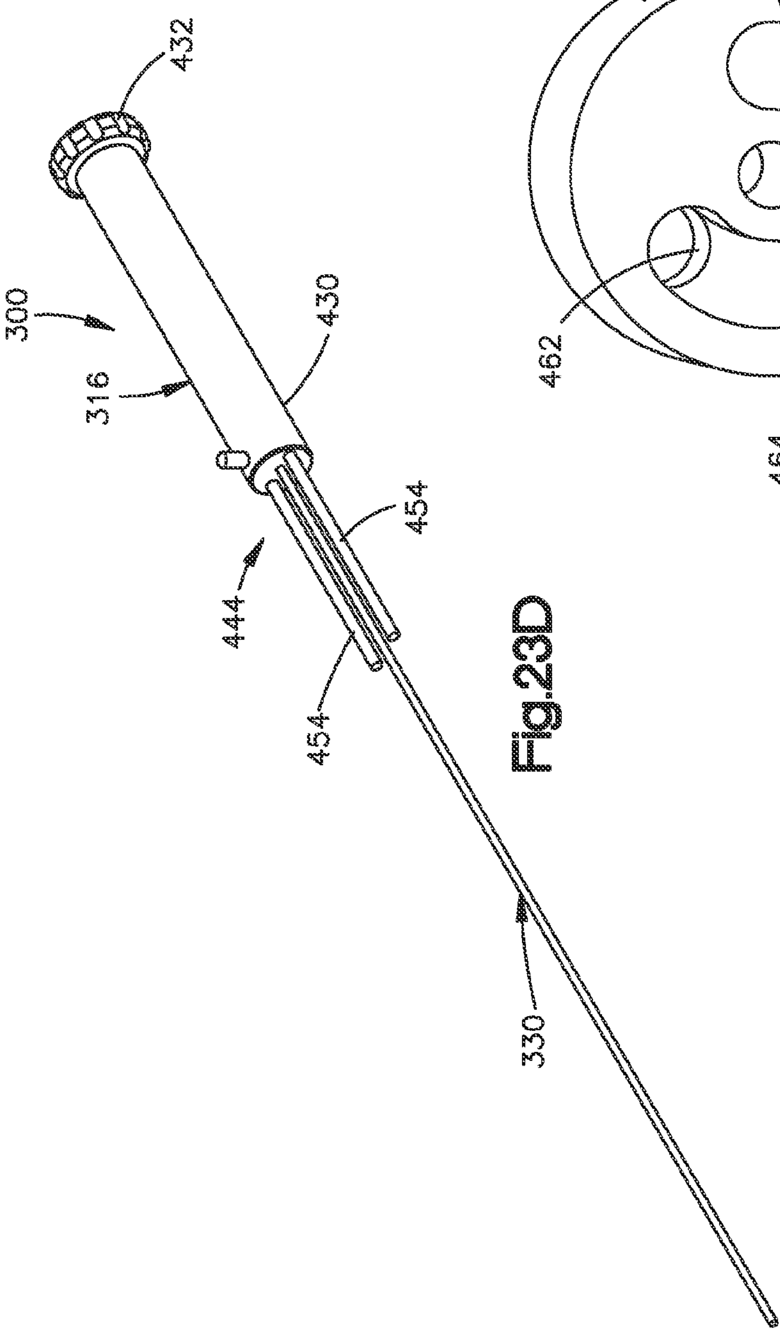


Fig.23D

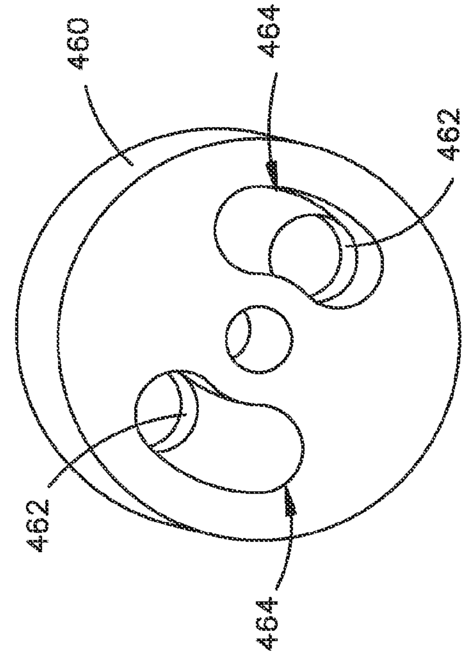
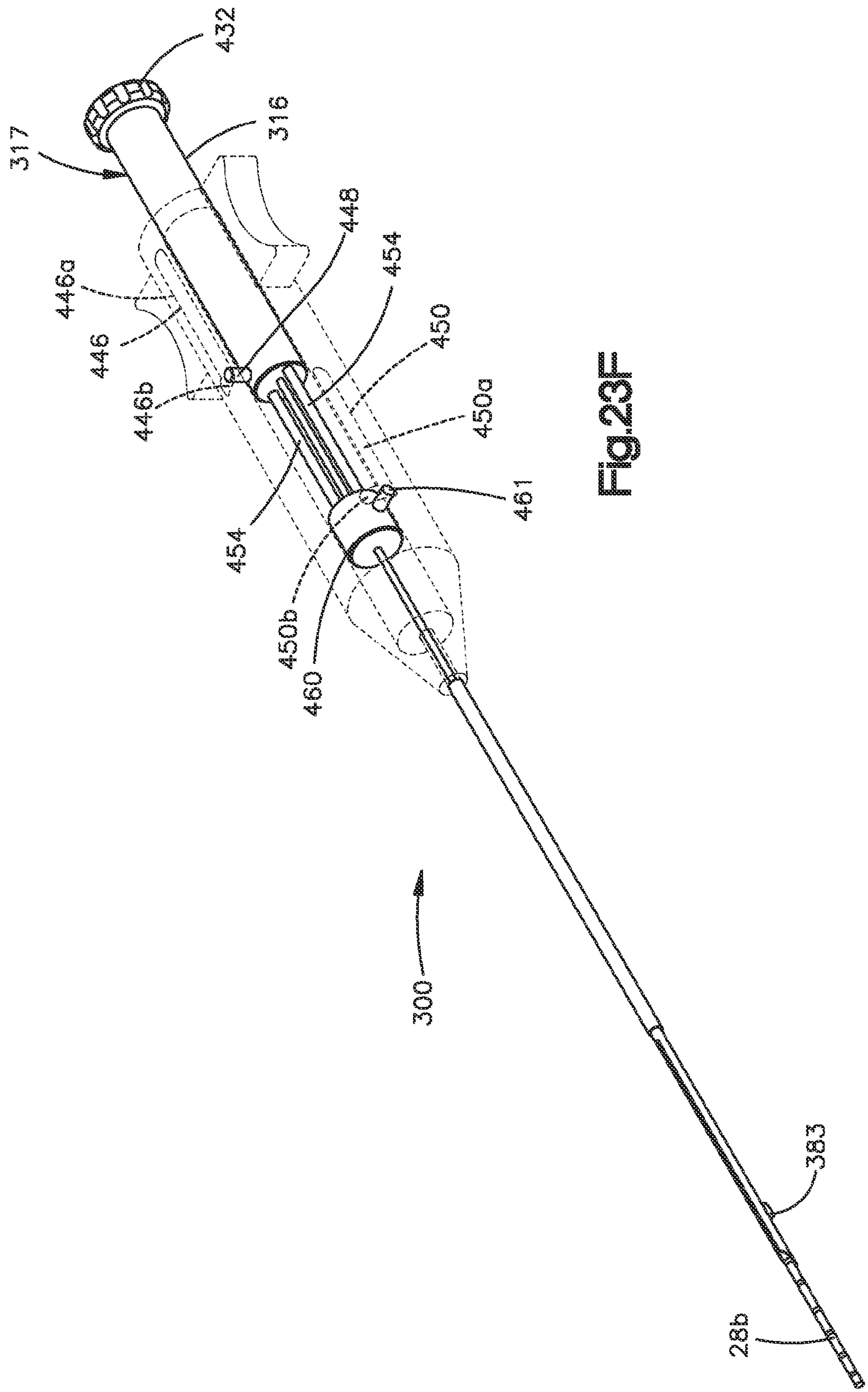


Fig.23E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446a
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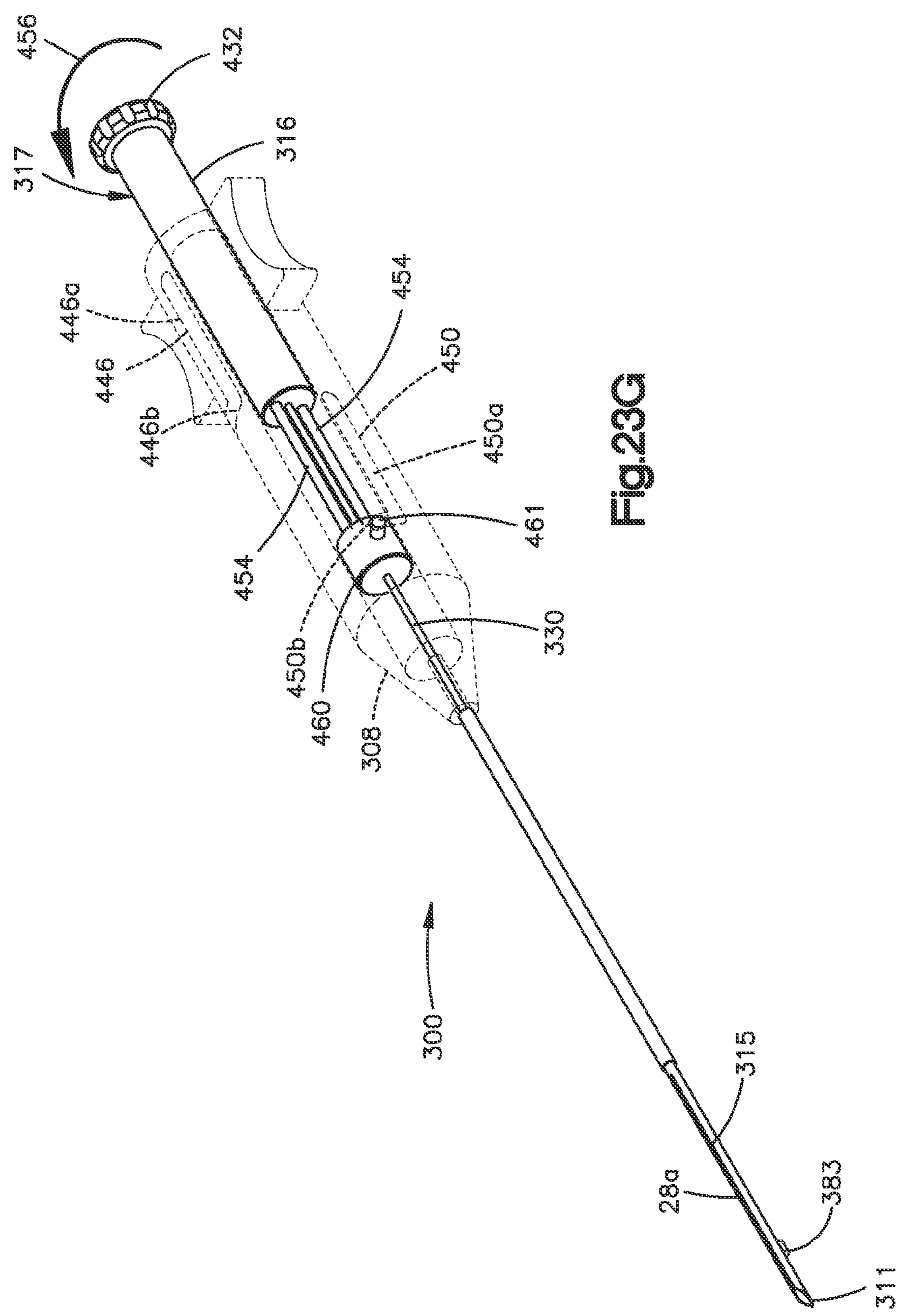
454
450b
460
300
383
28b

Fig.23F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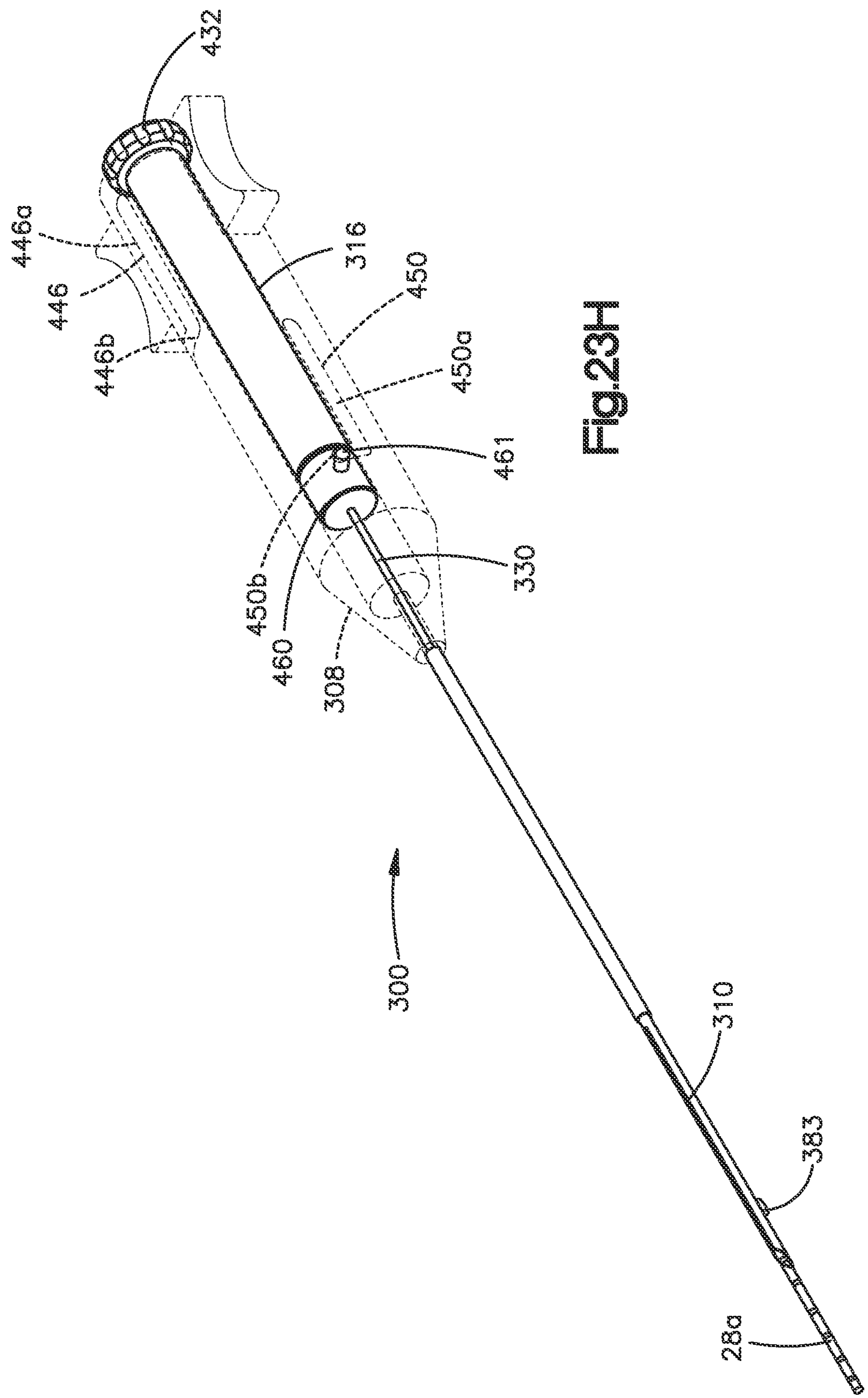
315
28a
383
311

Fig.23G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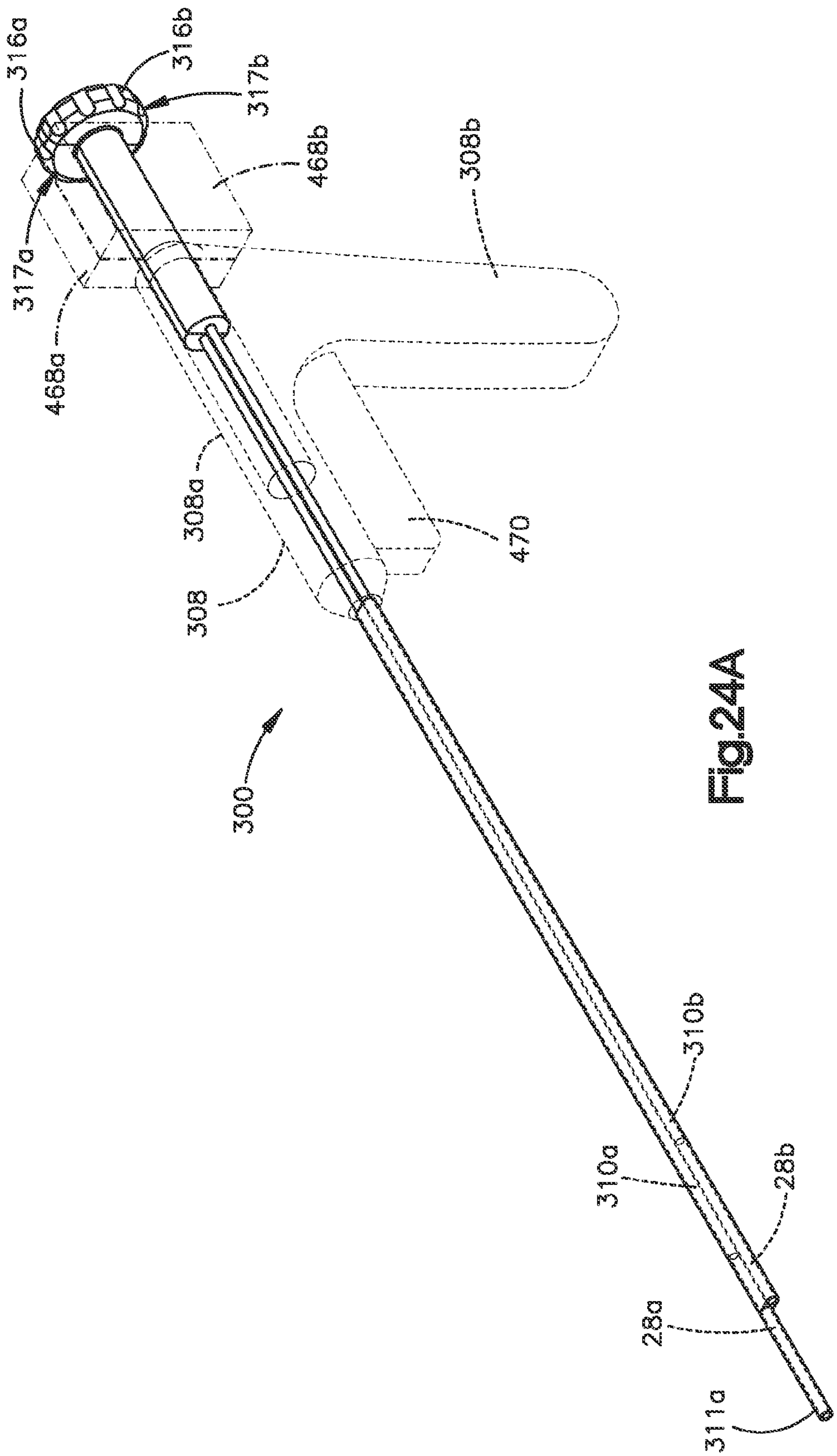
383
28a

Fig.23H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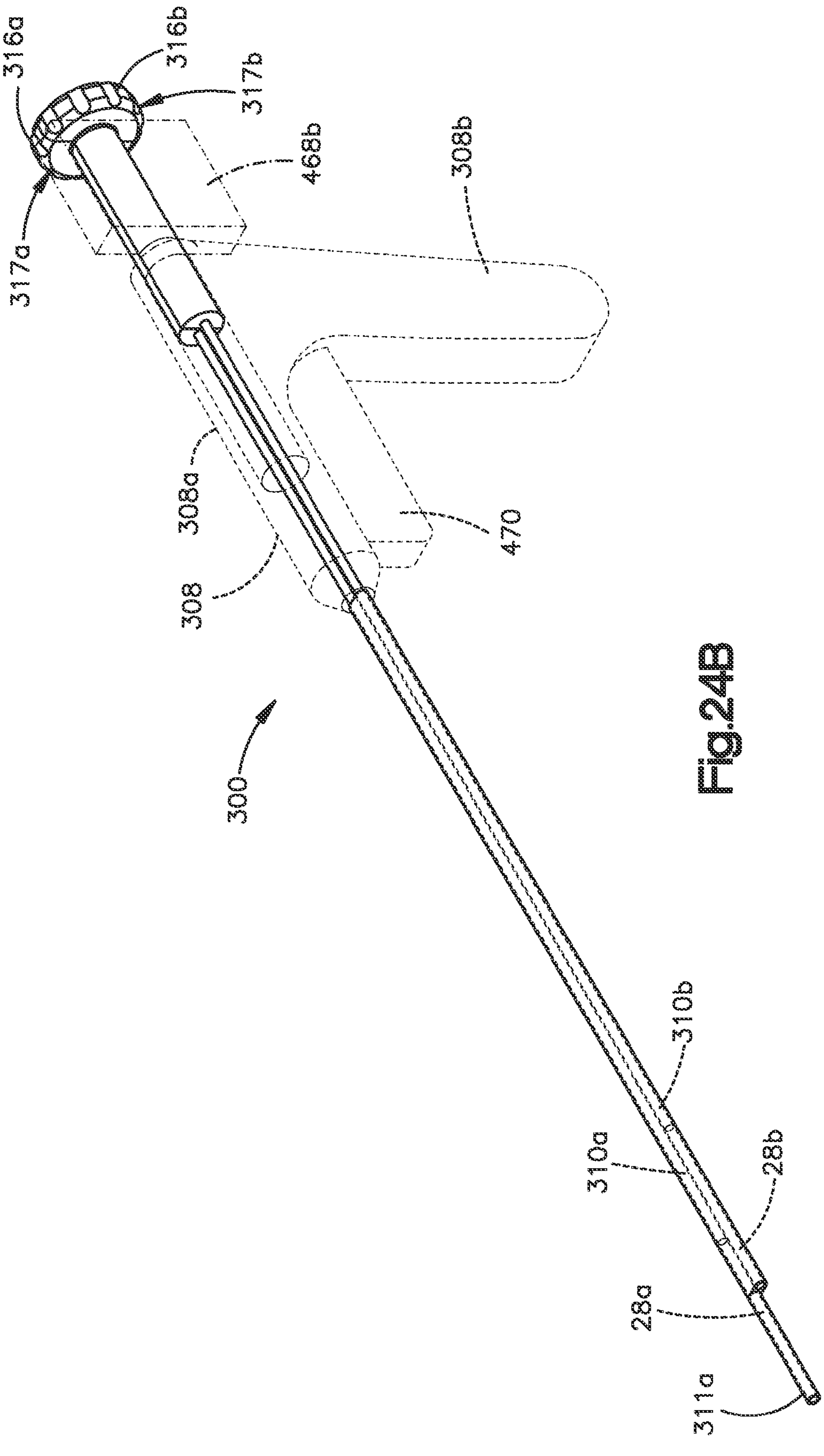
310b
310a
28b
28a
311a

Fig.24A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310b
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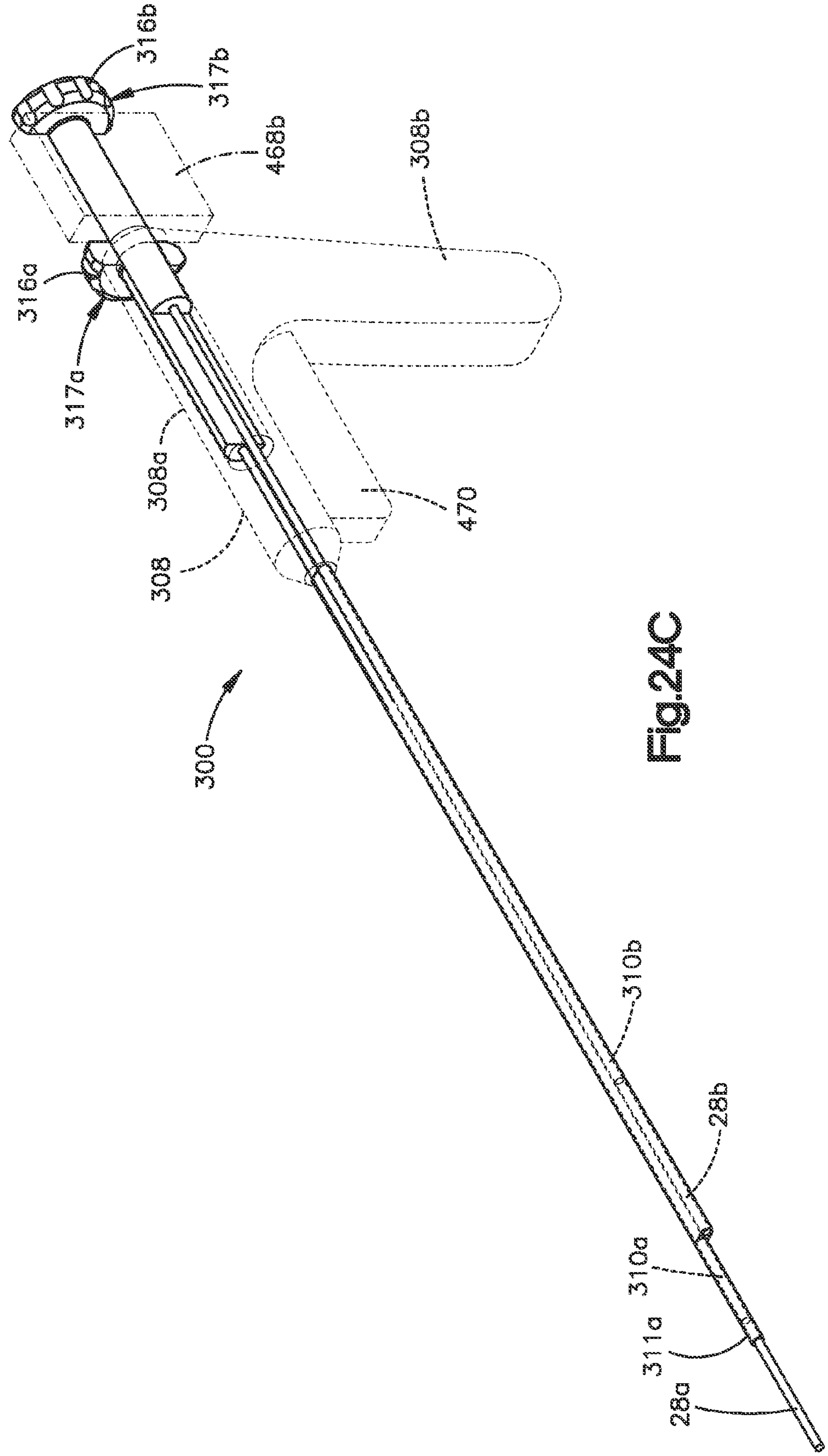
28b
28a
311a

Fig.24B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310b
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310a
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28a

Fig.24C

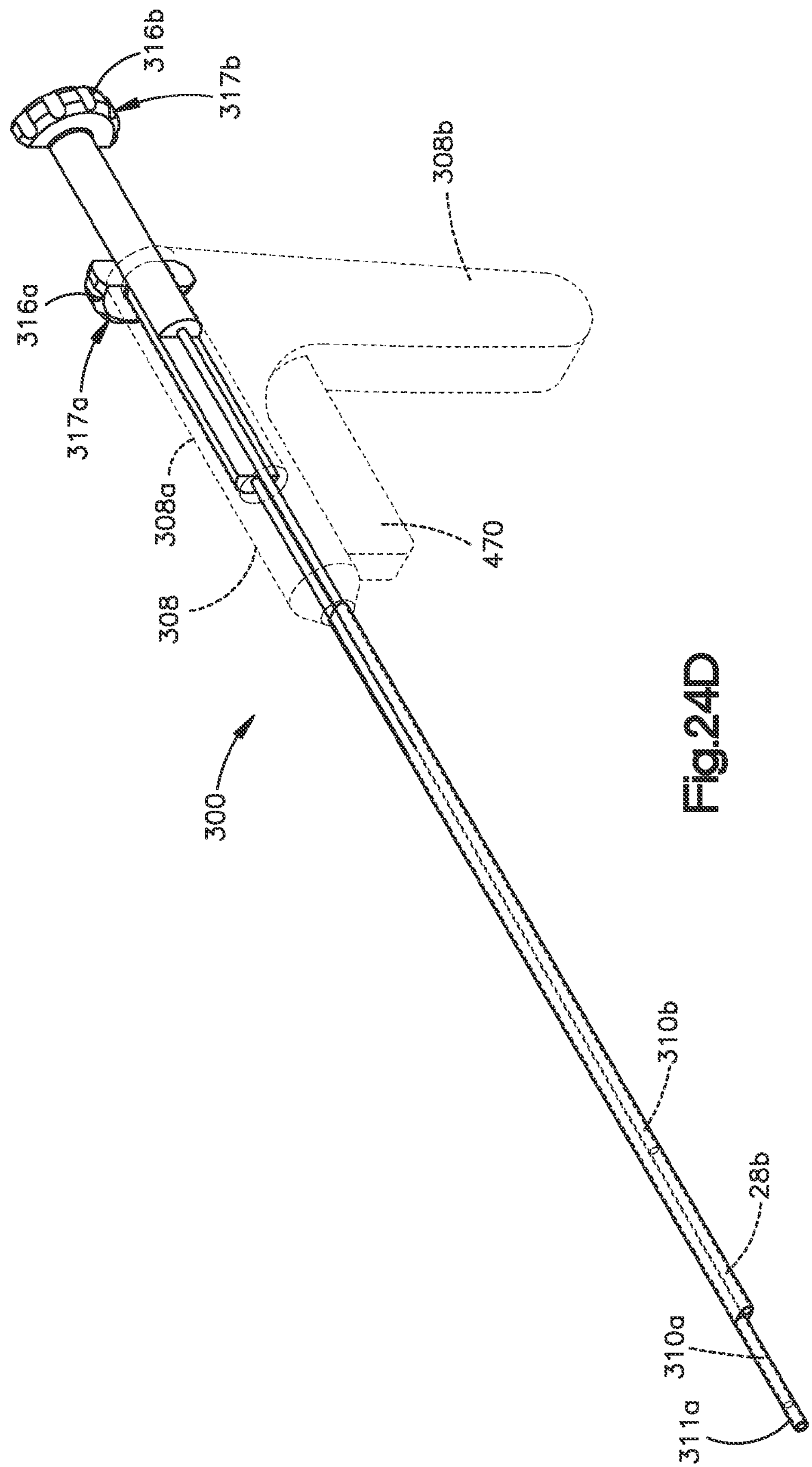


Fig.24D

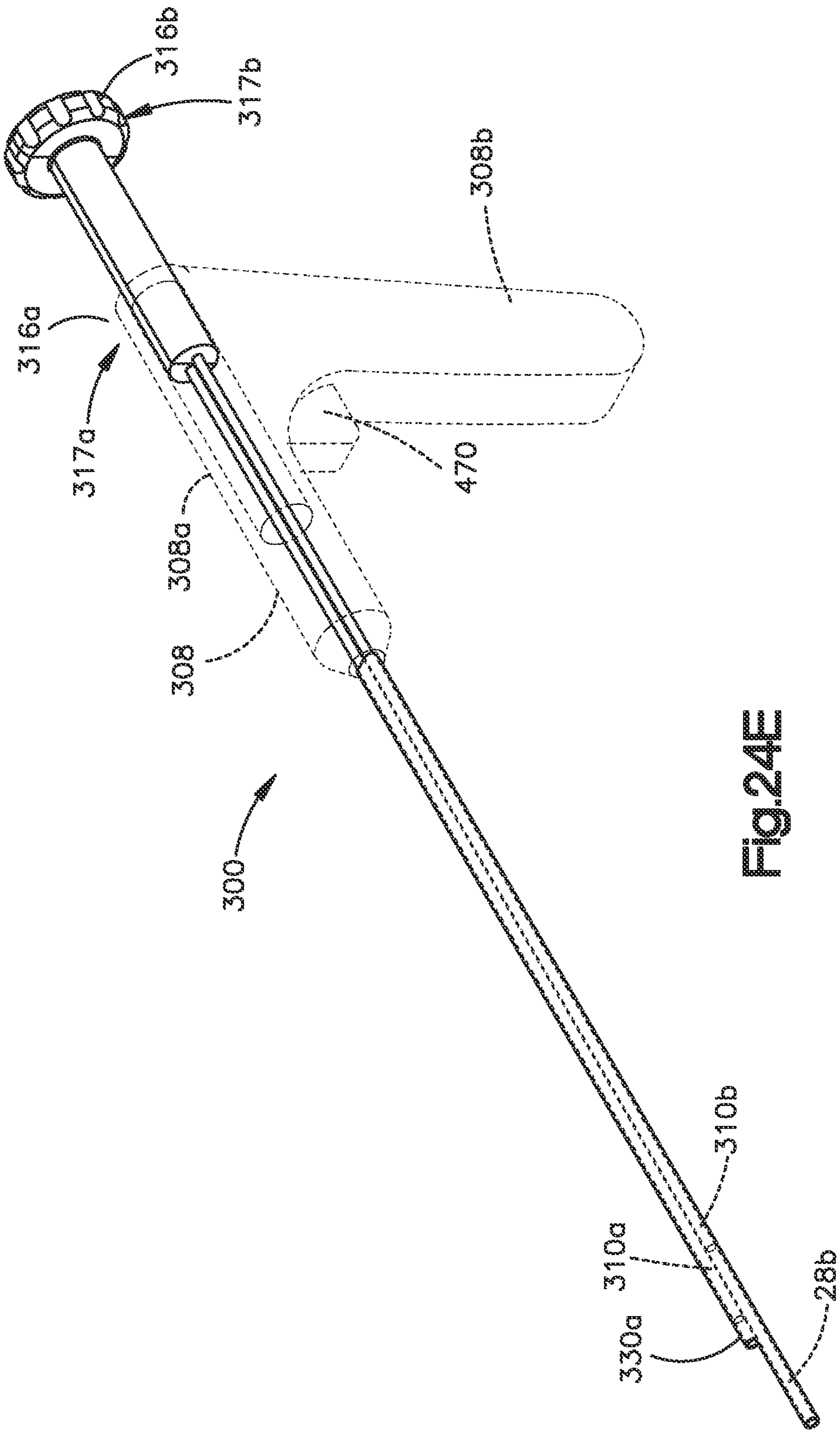


Fig.24E

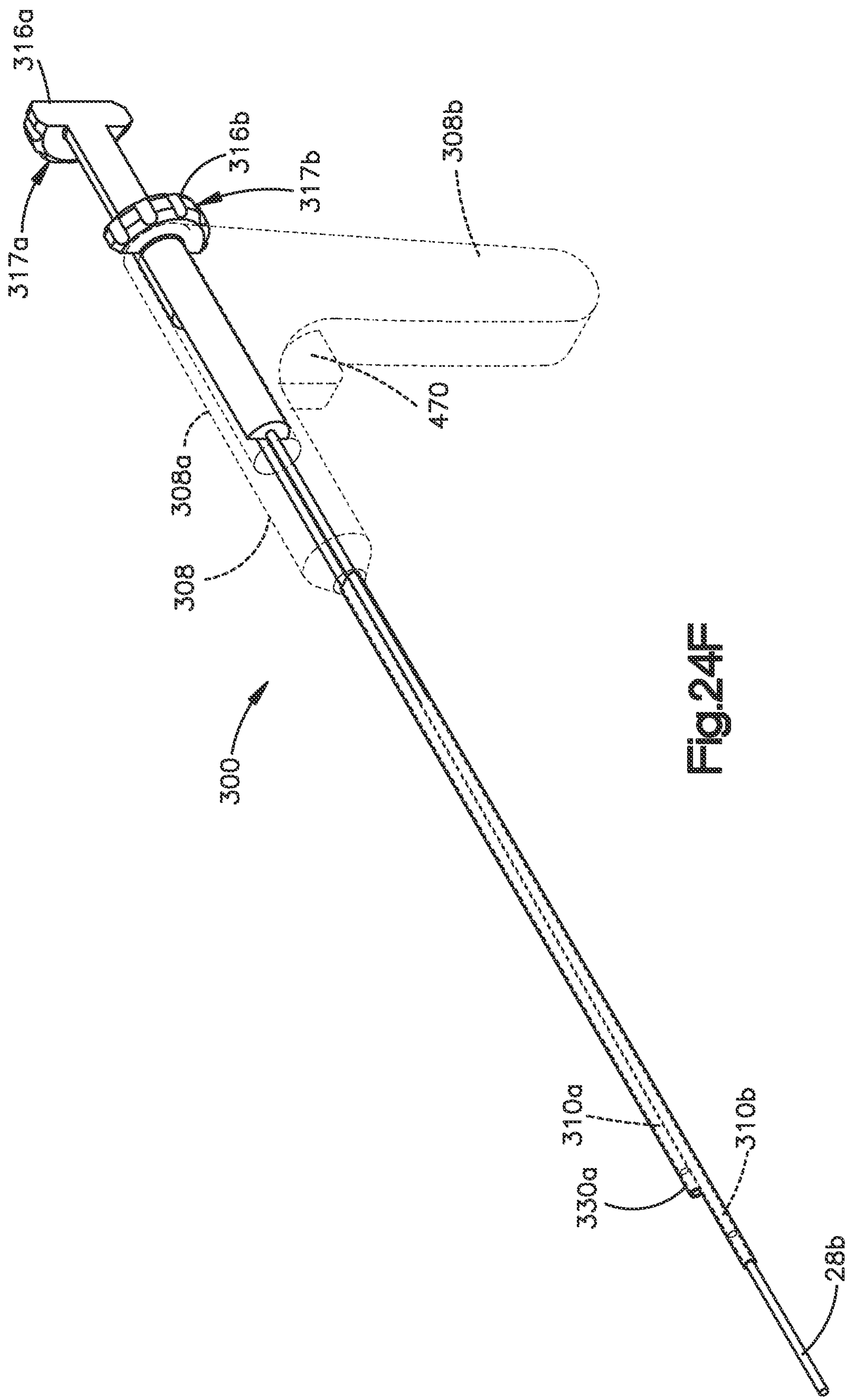


Fig.24F

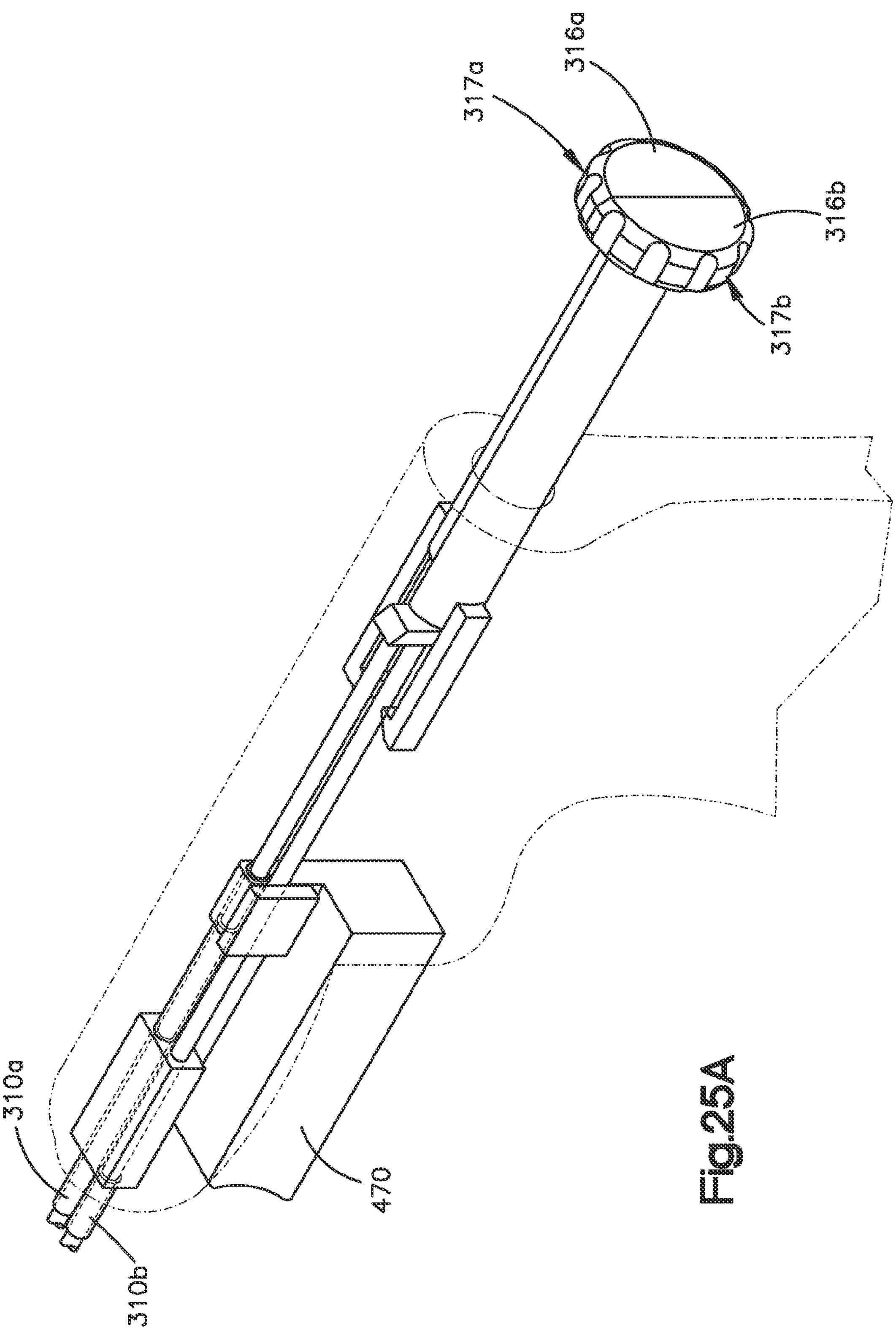


Fig.25A

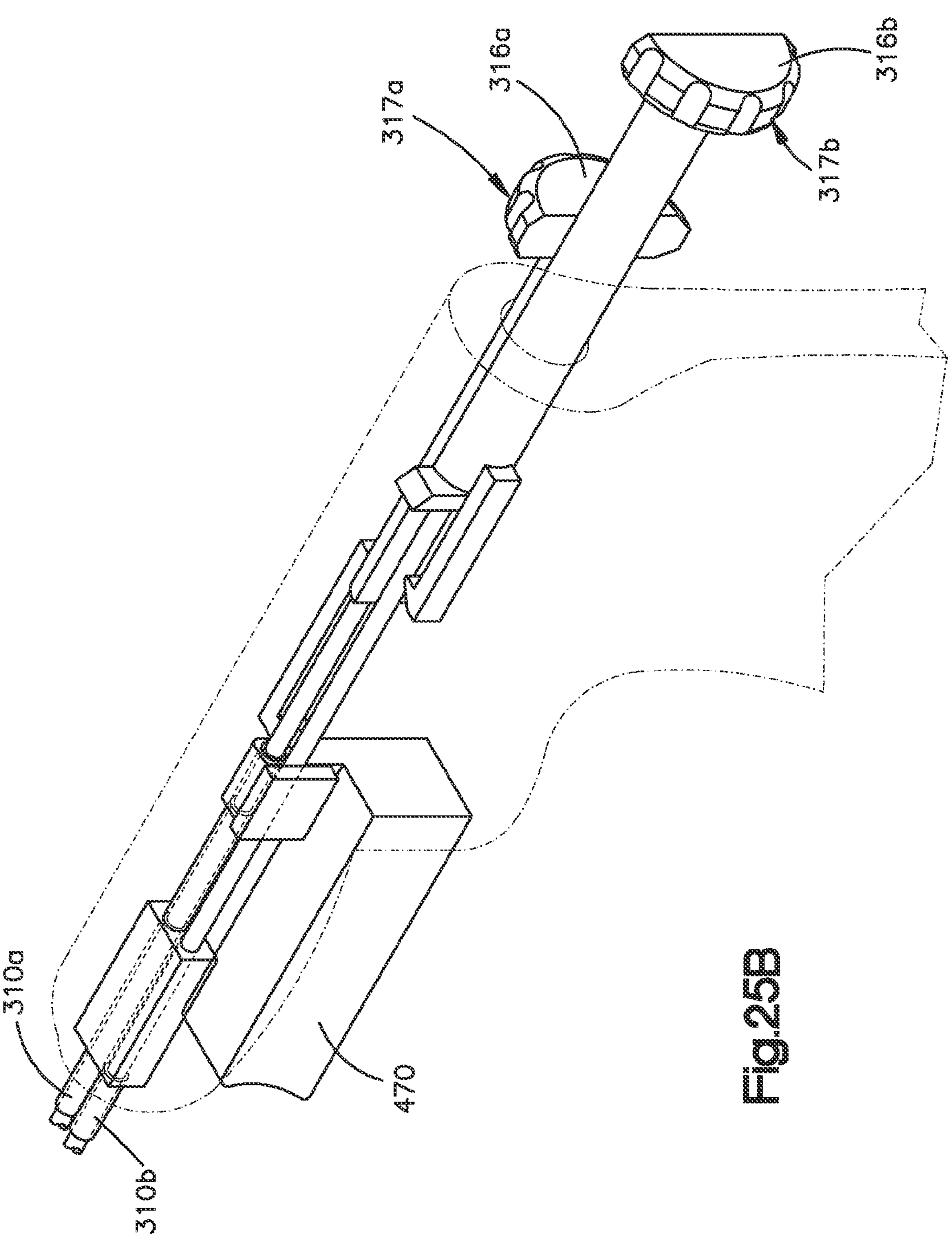


Fig.25B

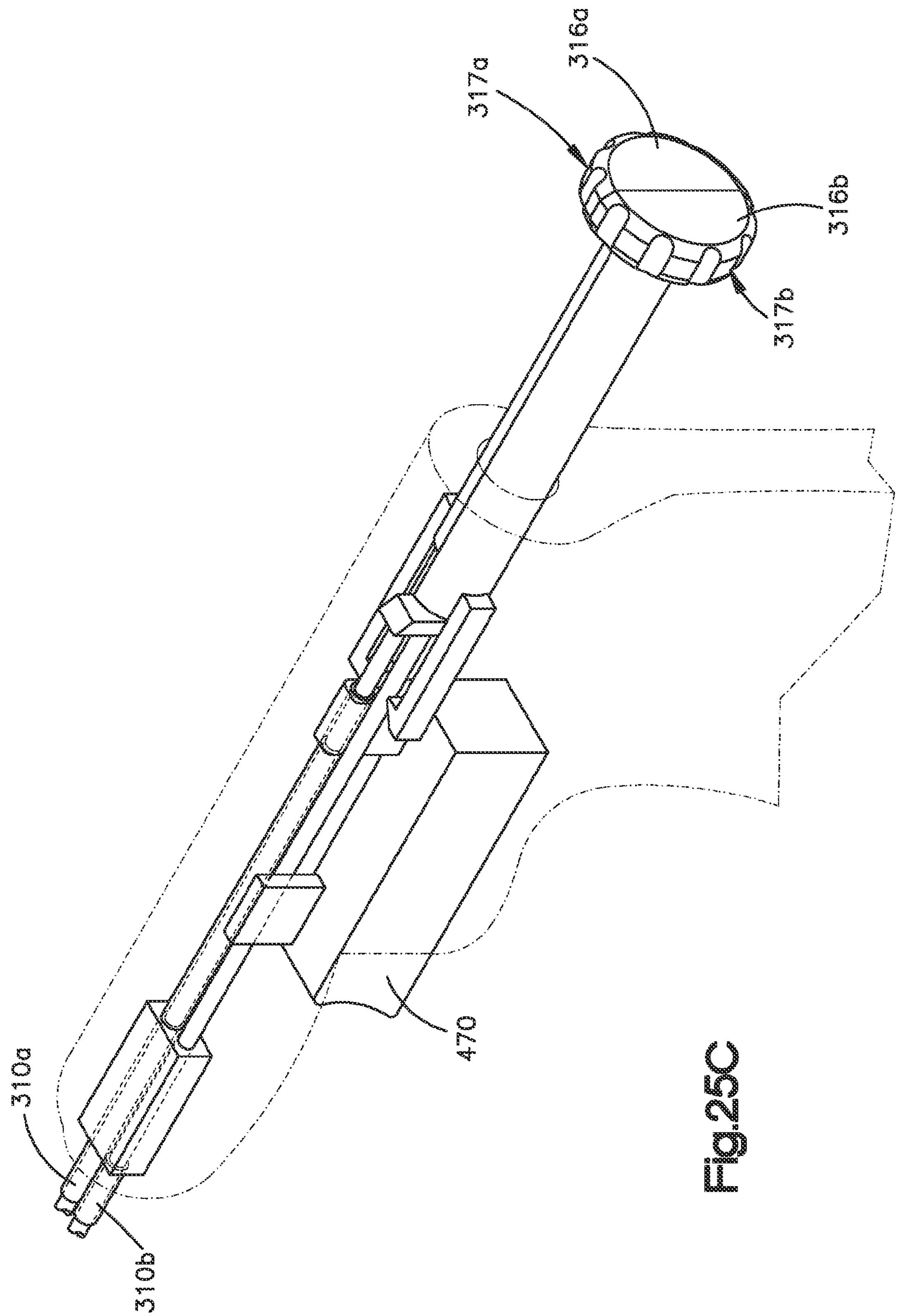


Fig.25C

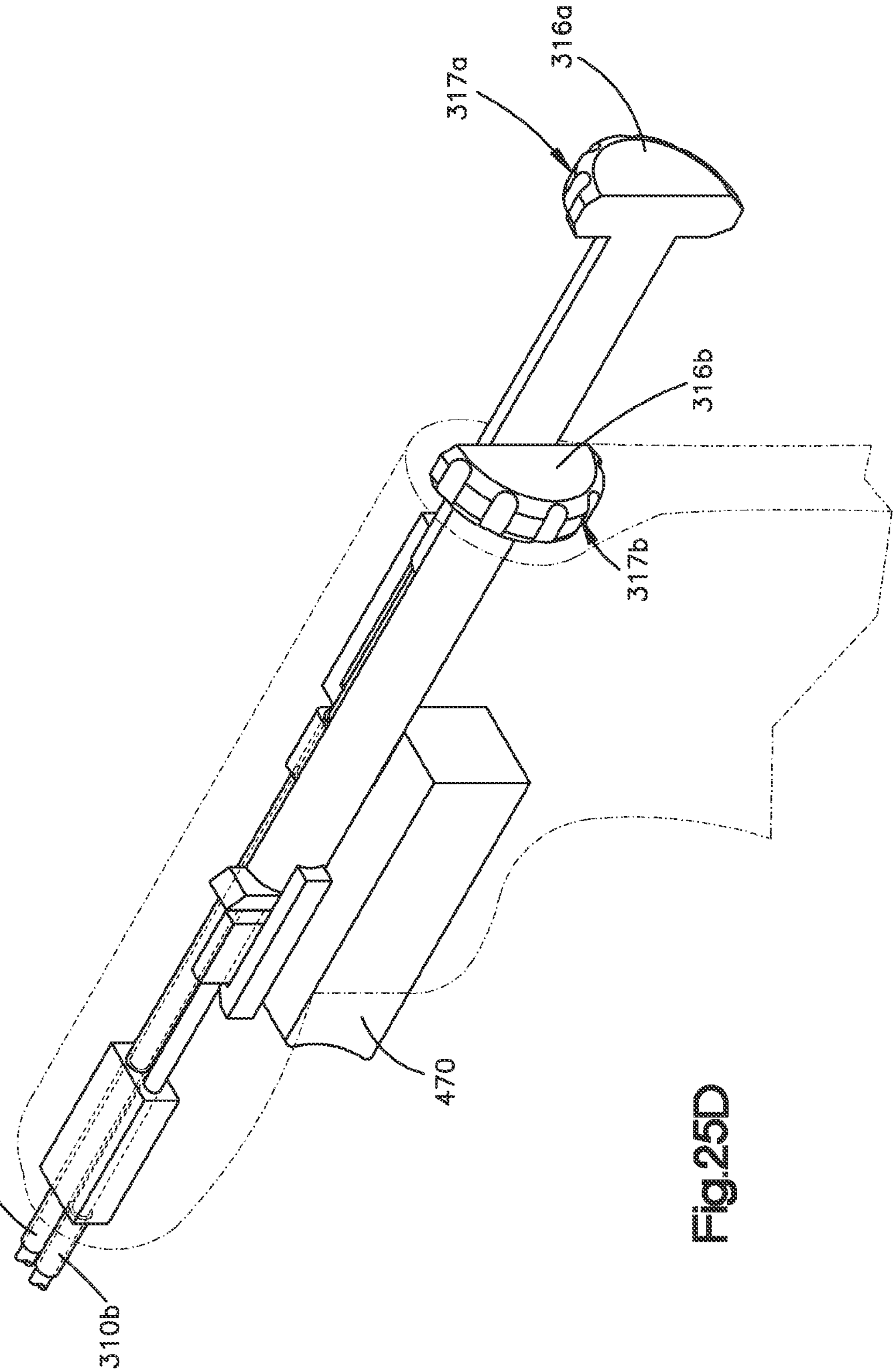


Fig.25D

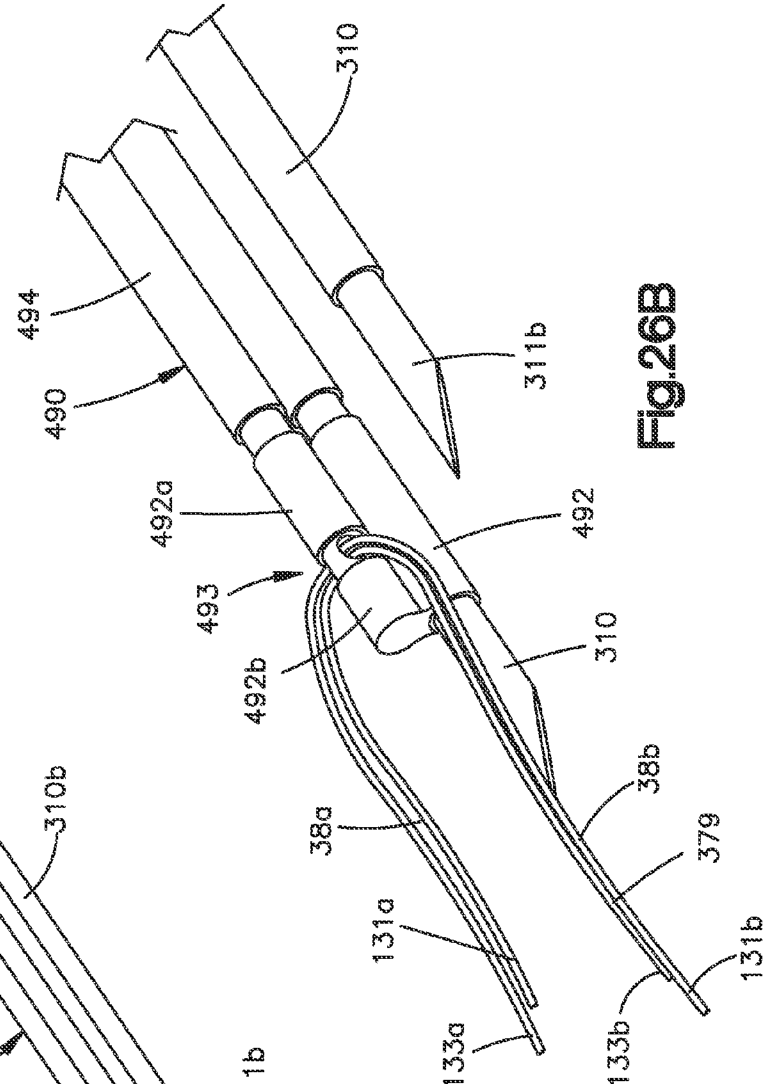


Fig.26B

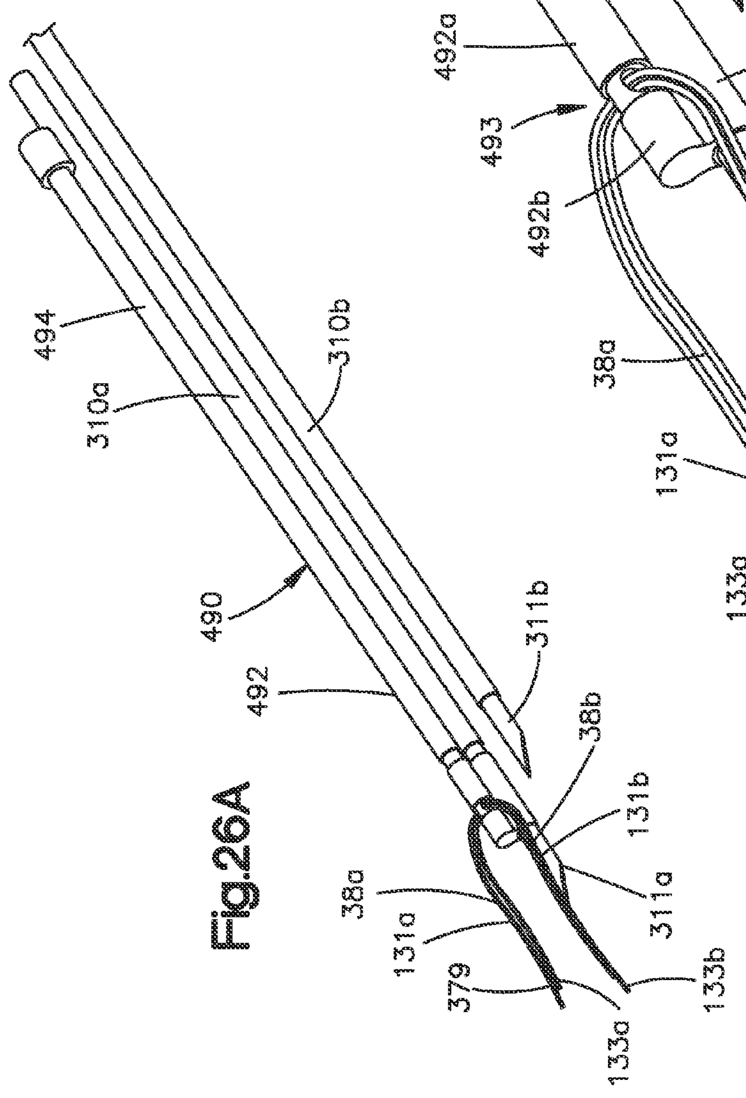


Fig.26A

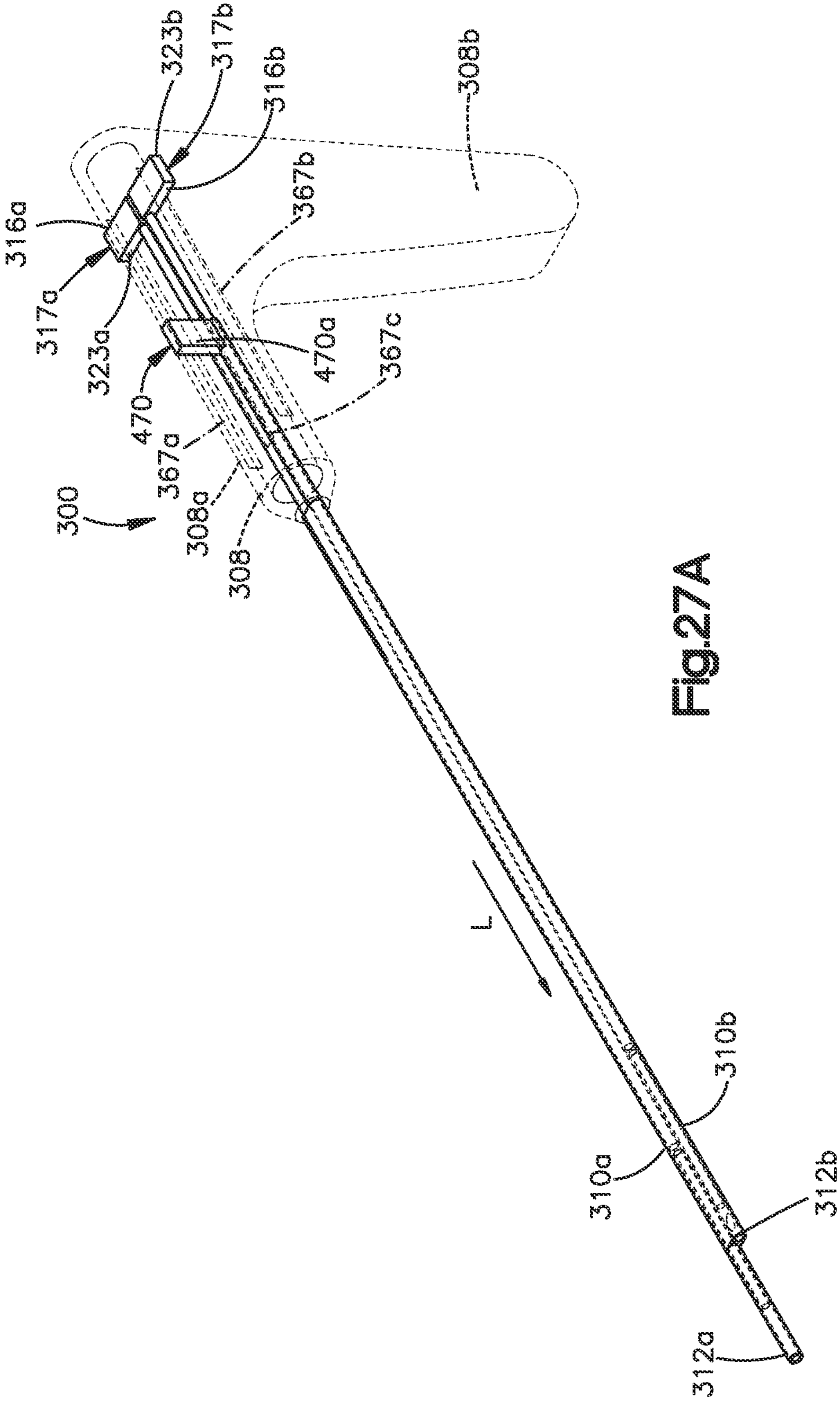
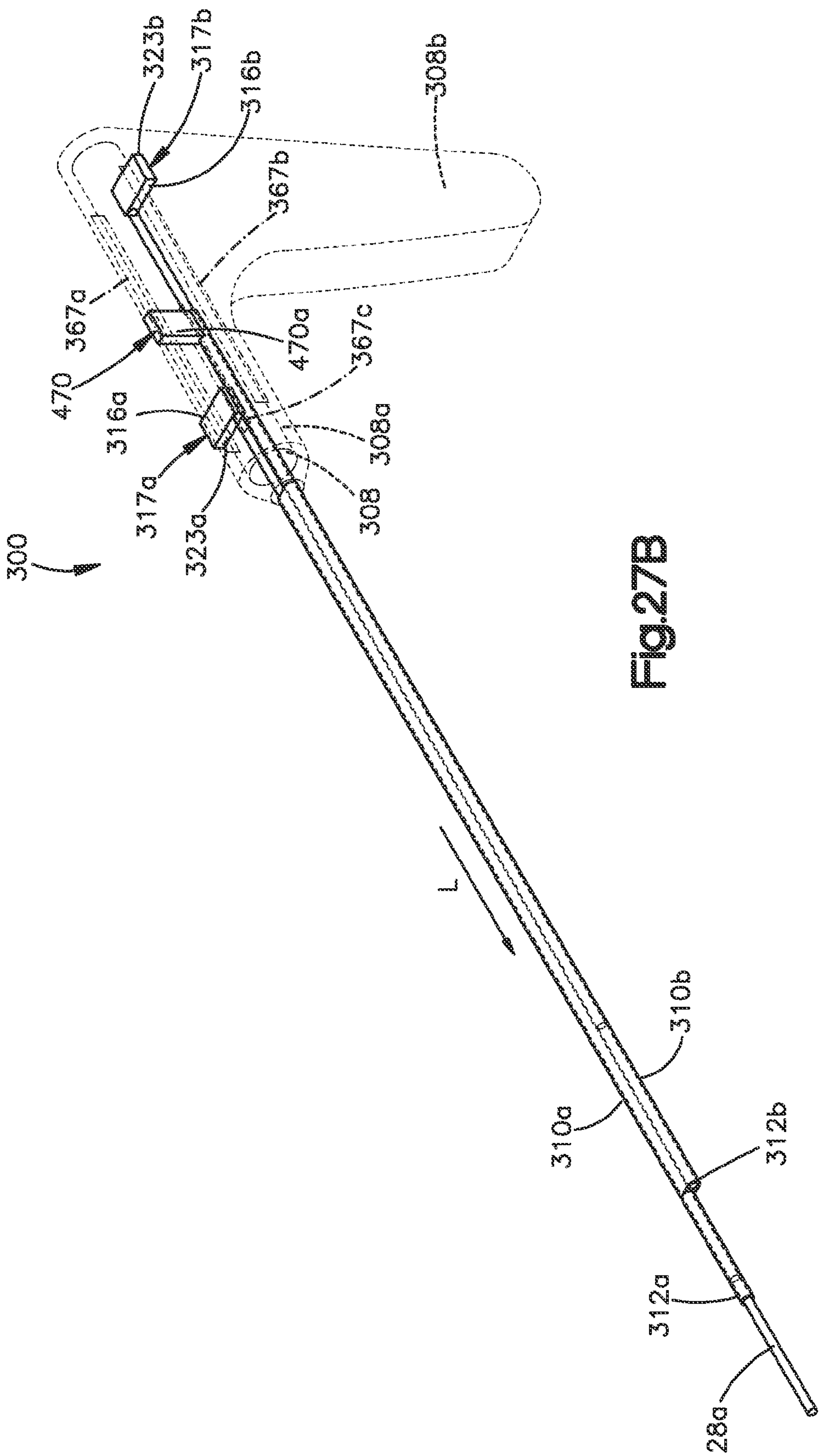

323b
317b
316b
308b
367b
316a
317a
323a
470a
367c
470
367a
300
308a
308
L
310b
310a
312b
312a

Fig.27A


323b
317b
316b
308b
367b
367a
470a
367c
470
316a
308a
317a
308
323a
300
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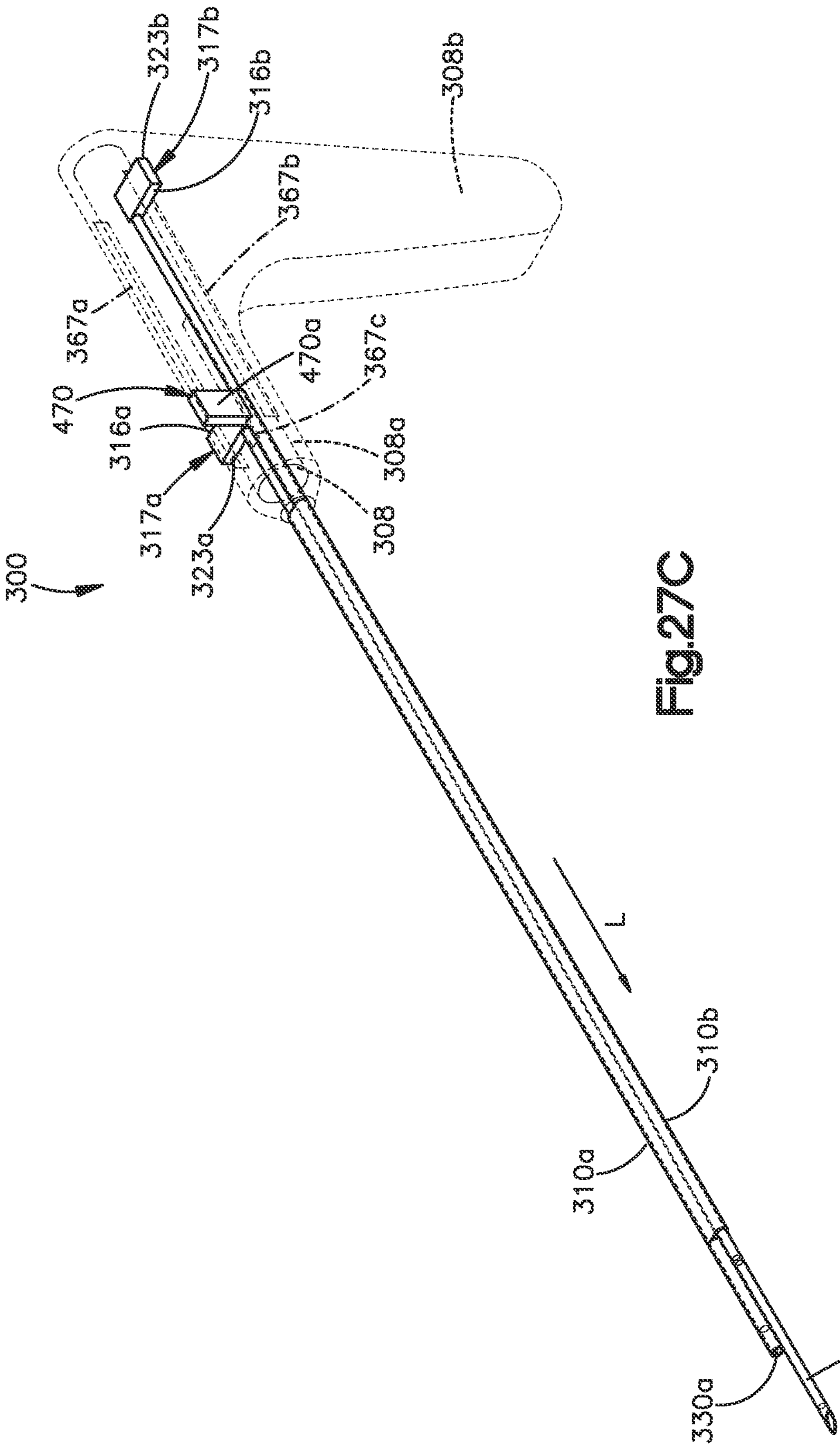
310a
312b
312a
28a

Fig.27B


300
323b
317b
316b
308b
367b
367a
470a
367c
470
316a
308a
317a
323a
308
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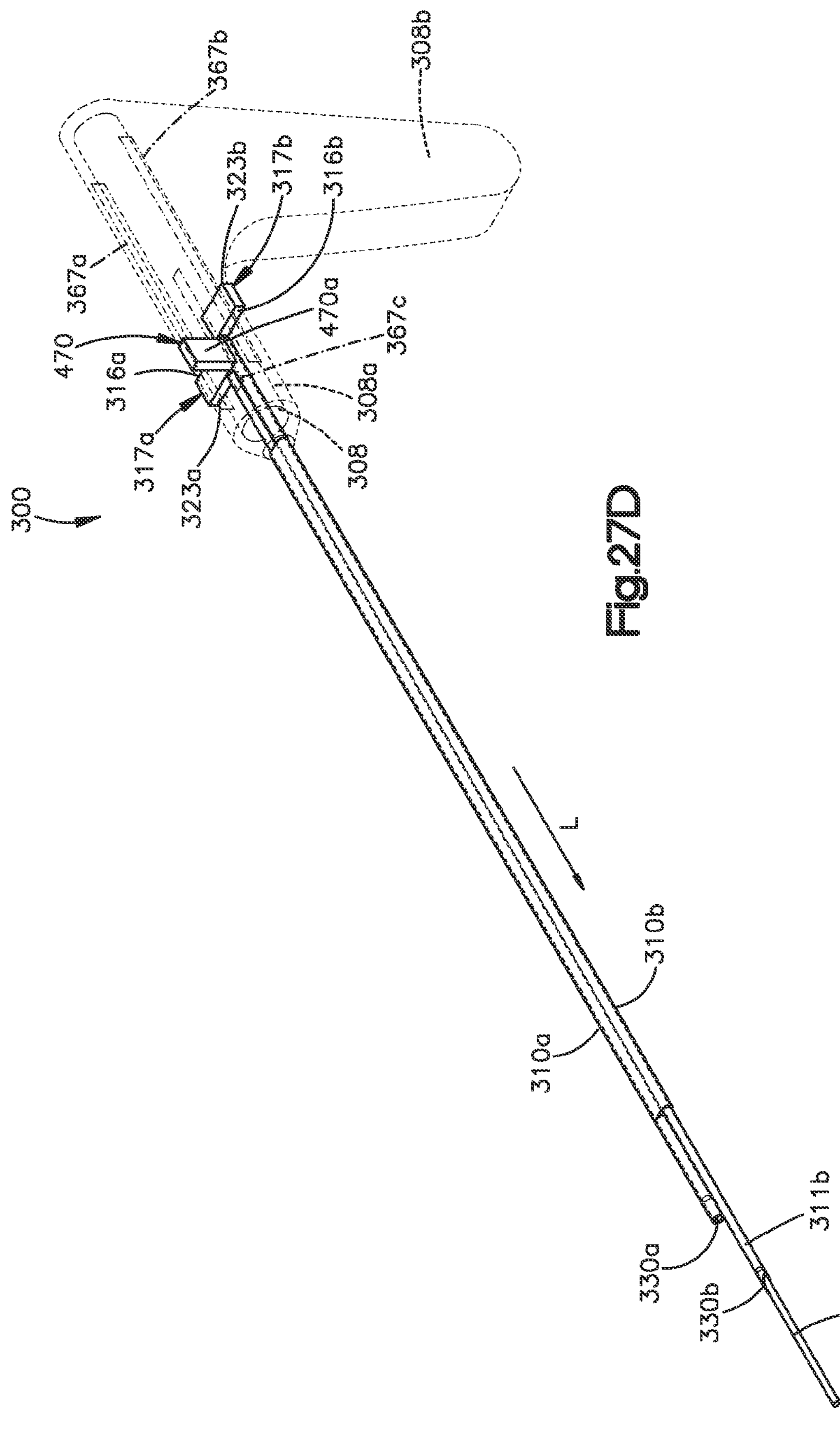
310b
310a
311b
330a

Fig.27C



308b
367b
323b
317b
316b
367a
470a
367c
470
316a
308a
317a
308
323a
300
L
310b
310a
311b
330a
330b
28b

Fig.27D

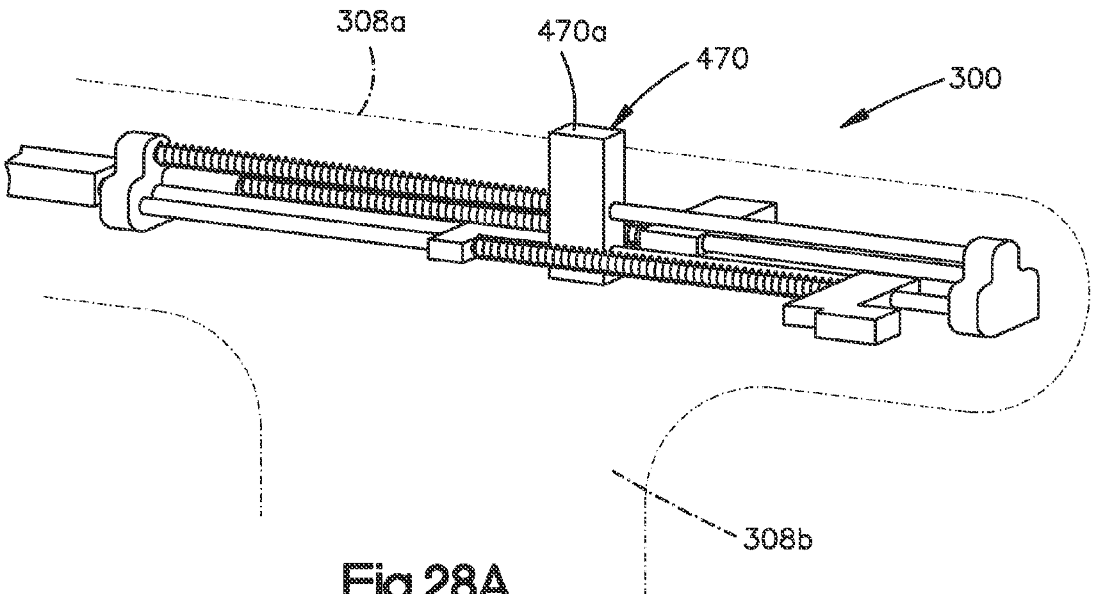


Fig.28A

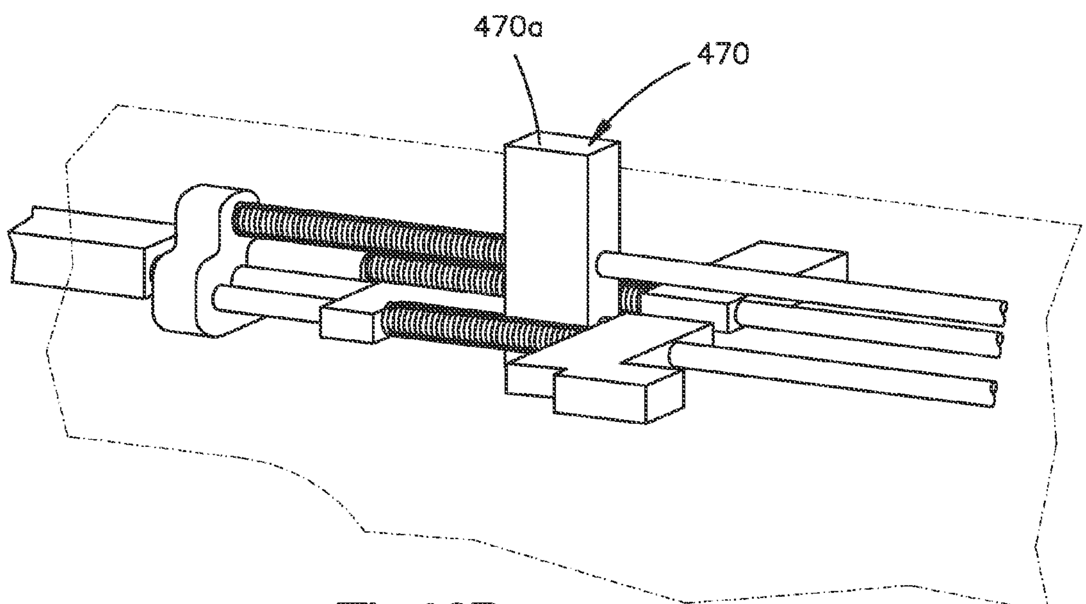


Fig.28B

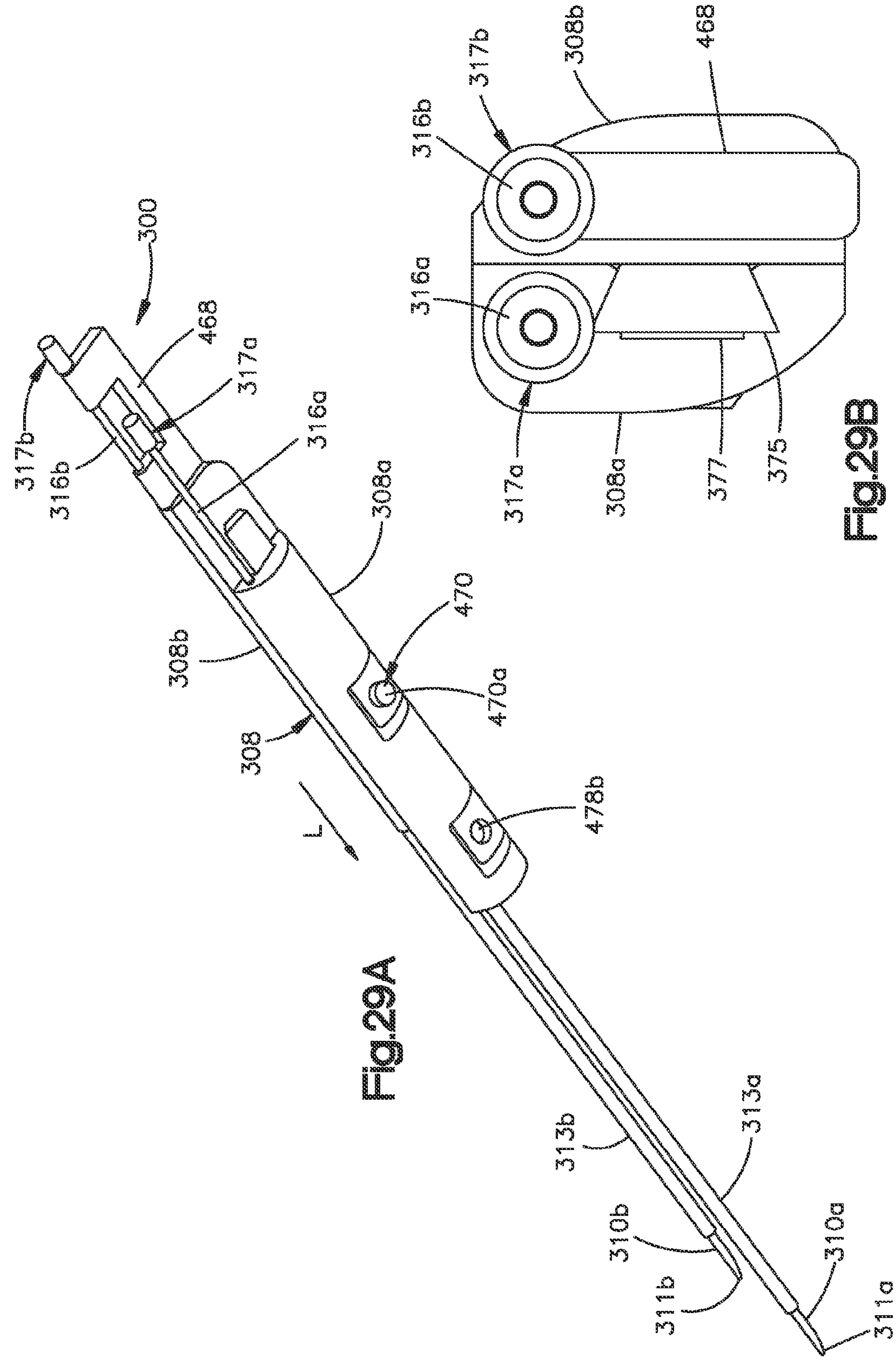
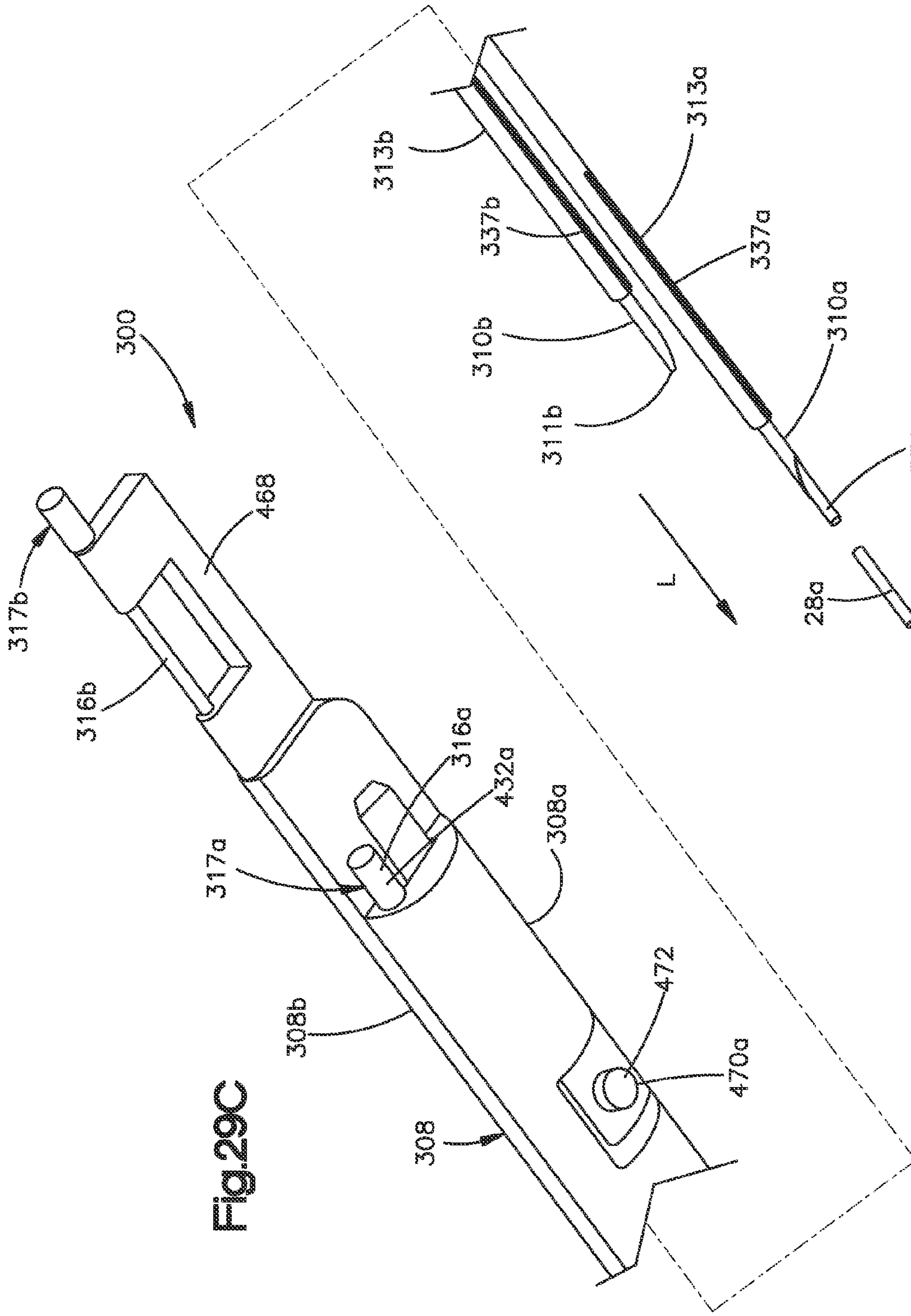


Fig.29A

Fig.29B


300
313b
313a
337b
337a
310b
310a
311b
330a
L
28a
317b
468
316b
316a
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308a
308b
472
470a
308

Fig.29C

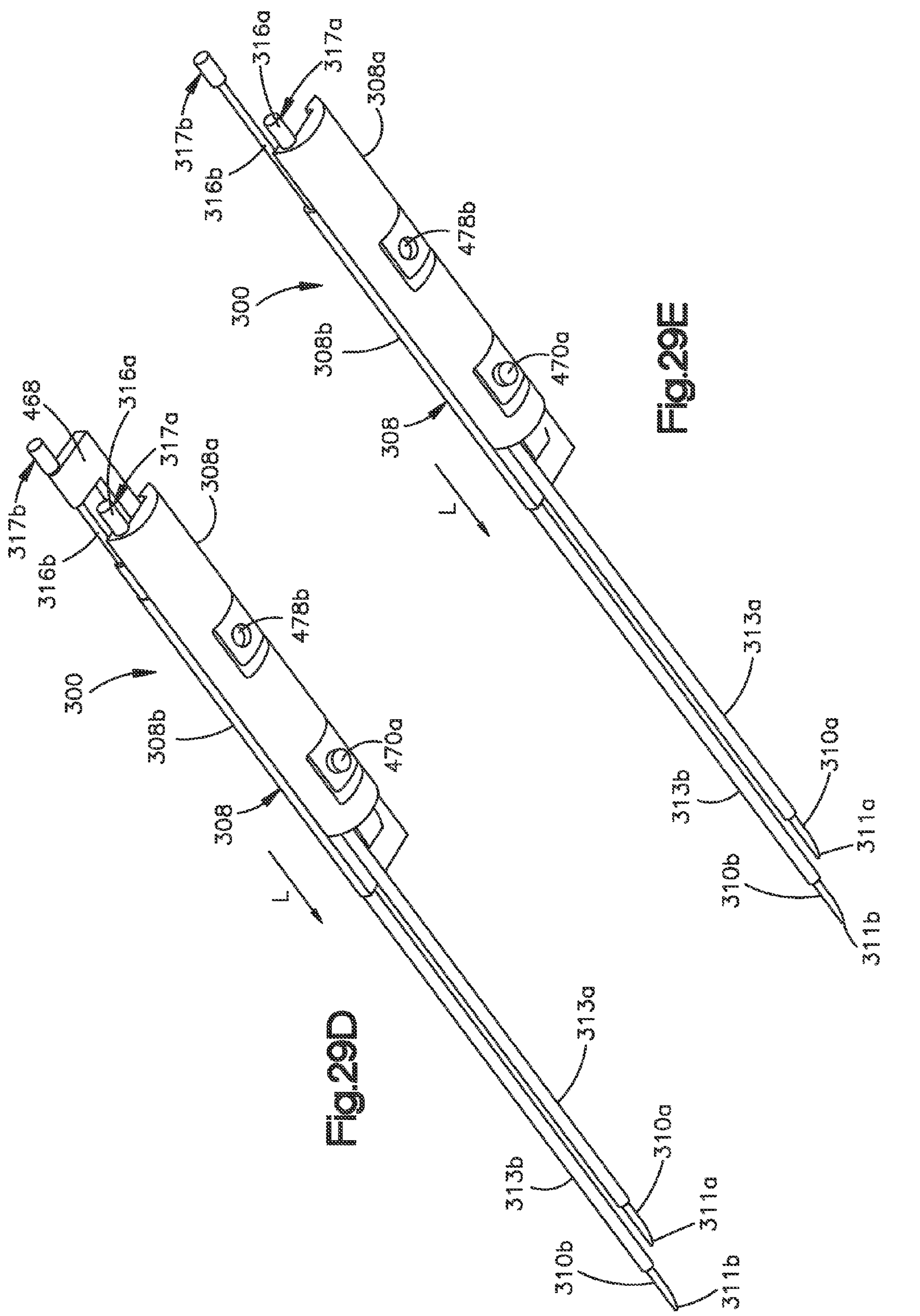

Fig.29E

Fig.29D

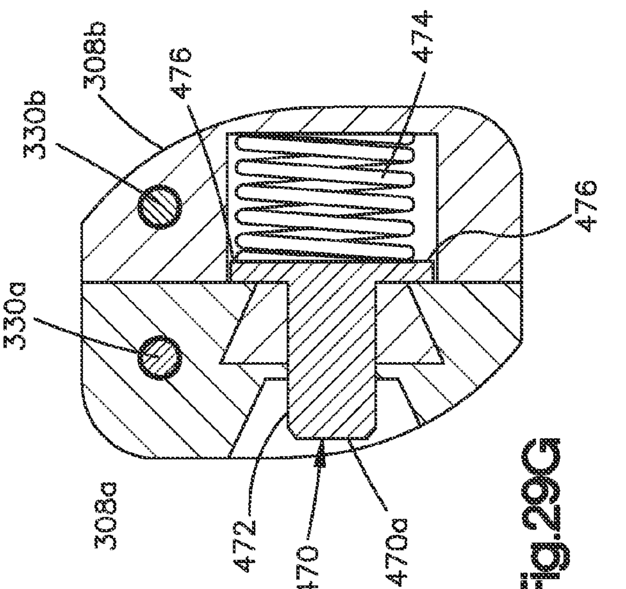

Fig.29G

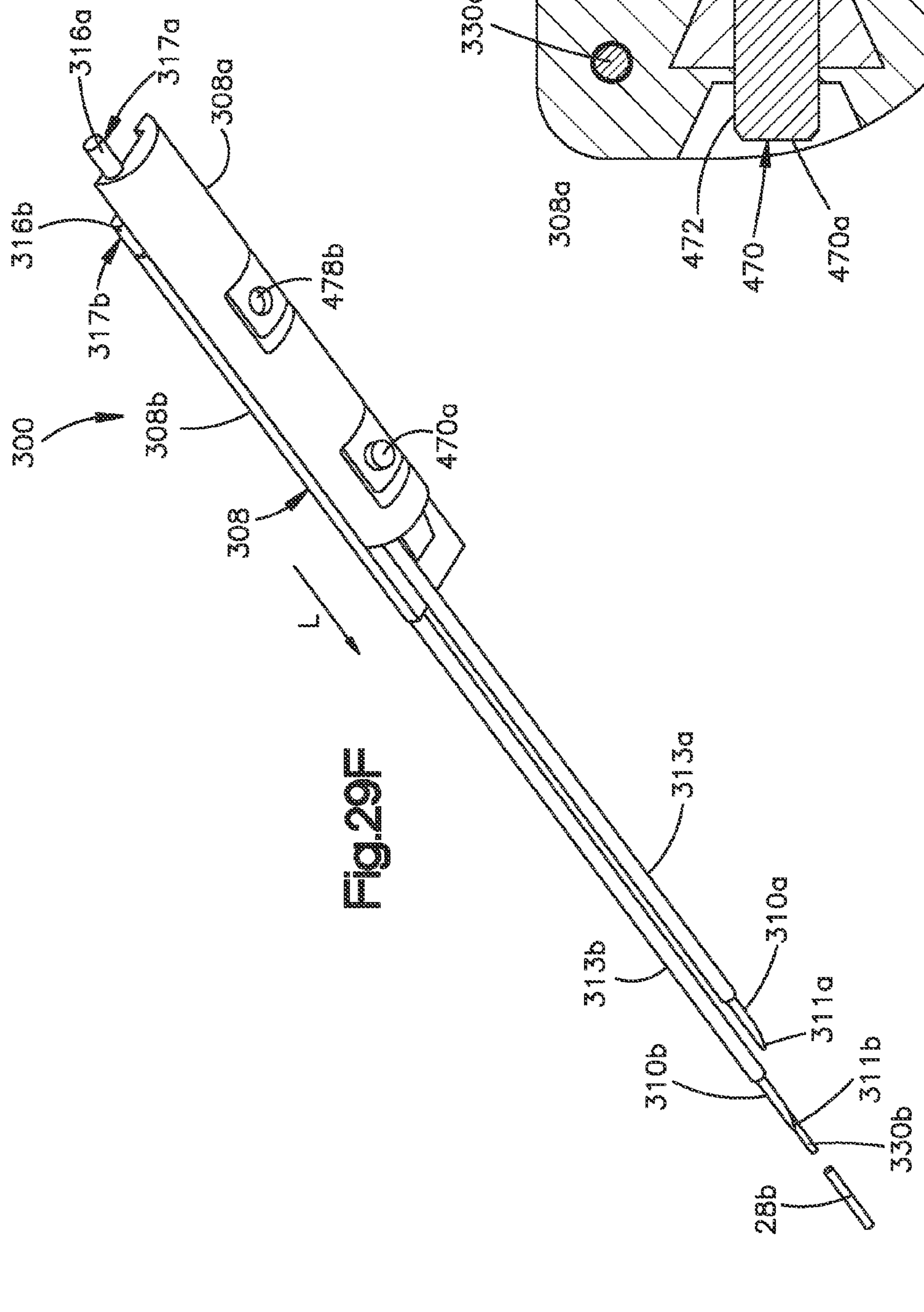

Fig.29F

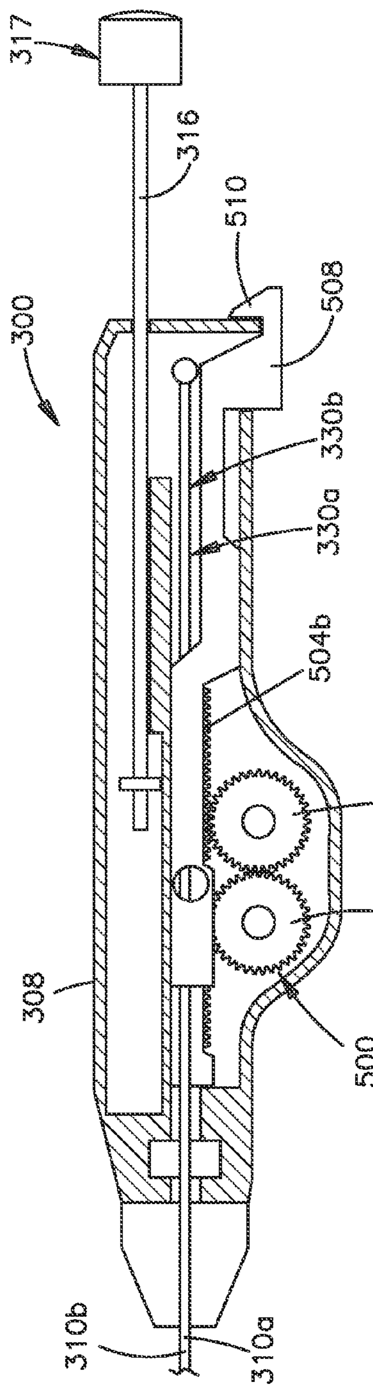

Fig.30A

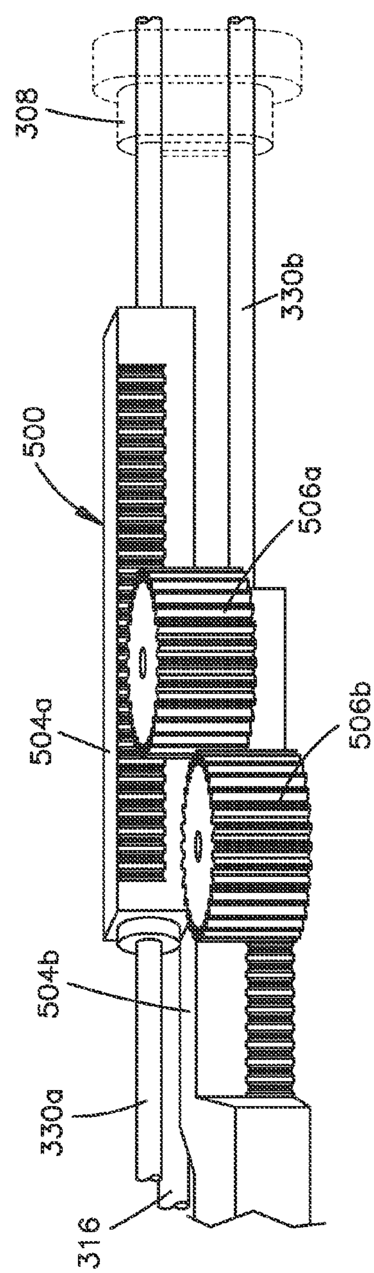

Fig.30B

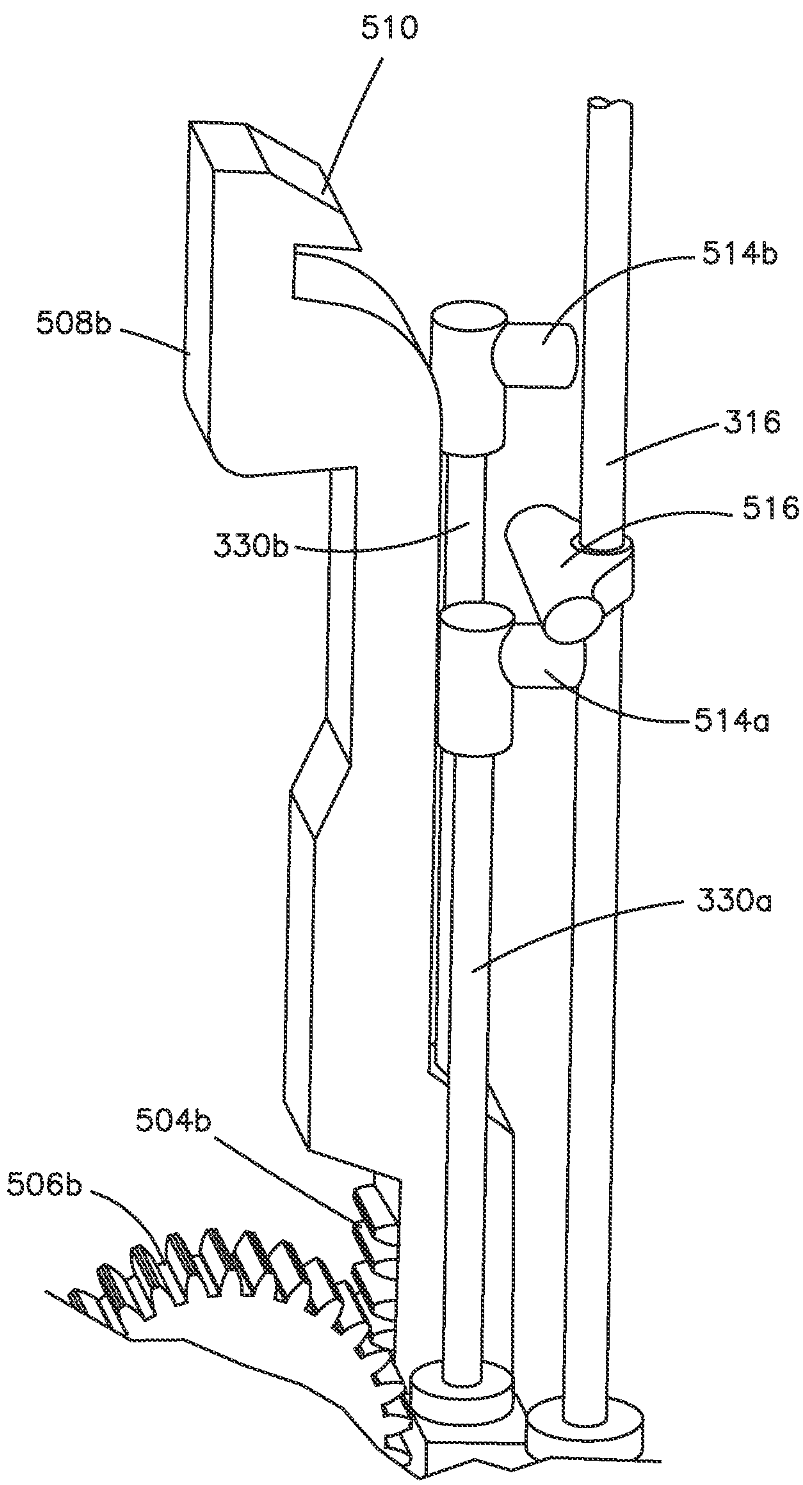

Fig.30C

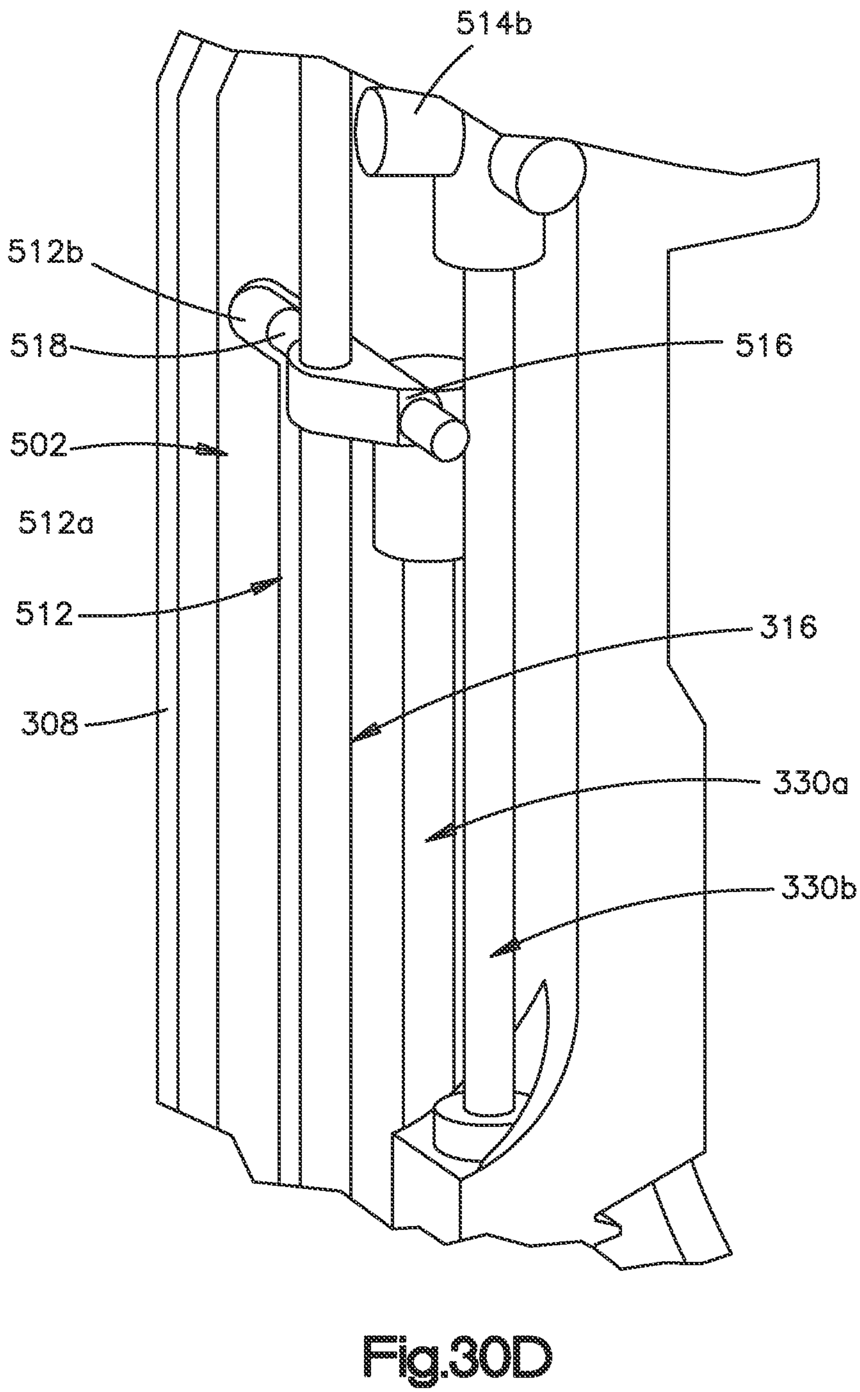

Fig.30D

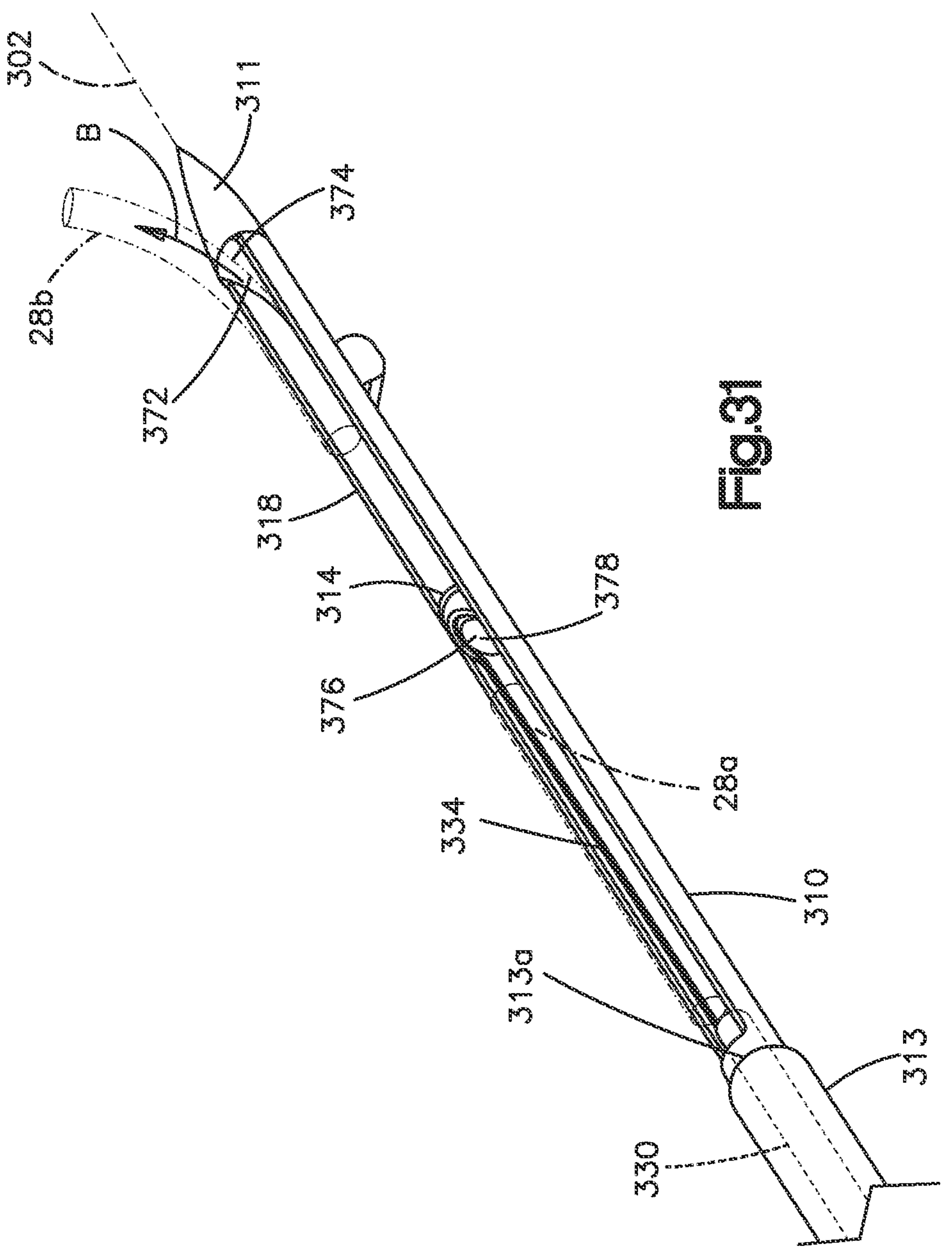

Fig.31

INSERTION INSTRUMENT FOR ANCHOR ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Ser. No. 13/095,192, which claims the benefit of U.S. Patent Application Ser. No. 61/328,251 filed on Apr. 27, 2010 (Overes), the disclose or each of which is hereby incorporated by reference as if set forth in its entirety herein. This application claims the benefit of U.S. Patent Application Ser. No. 61/398,699 filed on Jun. 29, 2010 (Overes, et al.), U.S. Patent Application Ser. No. 61/432,755 filed on Jan. 14, 2011 (Henrichsen, et al.), U.S. Patent Application Ser. No. 61/461,490 filed on Jan. 18, 2011 (Henrichsen, et al.), and U.S. Patent Application Ser. No. 61/443,142 filed on Feb. 15, 2011 (Overes), the disclosure of each of which is hereby incorporated by reference as if set forth in its entirety herein.

BACKGROUND

Orthopaedic surgical procedures often involve the use of a fixation device. Usually an access hole is produced in a bone or soft tissue wherein a suitable fixation device can be fastened. Apart from screws, expandable fixations devices can be used which are inserted into the hole in a collapsed state and transformed into an expanded state once being correctly positioned.

In one example orthopaedic surgical procedure, such as a lumbar microdiscectomy, radiculopathy is treated by surgically removing the herniated nucleus pulposus to achieve neural decompression. The lumbar microdiscectomy is one of the most common spinal surgeries performed today. Many patients find relief with this procedure, but for others, the disc could re-herniate through the opening in the annulus resulting in continuing pain and potentially requiring additional surgery. Currently, the standard microdiscectomy technique does not involve closing the annular defect and presents the surgeon with a dilemma. The surgeon may elect to remove the herniated portion of the nucleus impinging on the nerves, which treats radiculopathy, but may increase the risk of post-operative reherniation of the remaining nucleus through the existing defect of the annulus. Alternately, the surgeon may elect to perform extensive debulking, in which most of the remaining nucleus material is removed in addition to the herniated portion to minimize the risk of post-operative reherniation. However, the risk of post-operative disc height collapse and subsequent progression to lower back pain increases.

Conventional expandable implants include a sleeve with an expandable portion having plurality of fingers or expandable parts formed by intermediate slots or holes in the peripheral wall of the sleeve and a compression element extending through the central bore of the sleeve. The compression element can be coupled to the front end of the sleeve so that upon pulling said compression element towards the rear end of the sleeve said fingers or expandable parts are bent radially outwards so as to transform said expandable portion from its collapsed state to its expanded state.

SUMMARY

In accordance with one embodiment, an insertion instrument is configured to eject at least one anchor at a target location. The anchor includes an anchor body that has a substrate that extends substantially along a direction of elongation. The substrate defines a plurality of openings spaced along the direction of elongation. The anchor further includes an actuation member that is woven through at least two of the openings. The insertion instrument includes a cannula that defines an elongate opening sized to receive the anchor body. The insertion instrument further includes a pusher member insertable into the cannula and configured to be depressed in the elongate opening so as to eject the anchor body from the cannula and into the target location. When a tensile force is applied to the actuation member along a direction substantially along the direction of elongation, the anchor body collapses along the direction of elongation and expands along a second perpendicular with respect to the direction of elongation.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of an example embodiment of the application, will be better understood when read in conjunction with the appended drawings, in which there is shown in the drawings example embodiments for the purposes of illustration. It should be understood, however, that the application is not limited to the precise arrangements and instrumentalities shown. In the drawings:

FIG. 1A is a schematic side elevation view of an anchor assembly including a pair of anchor bodies implanted across an anatomical defect and shown in a first configuration;

FIG. 1B is a schematic side elevation view of the anchor assembly illustrated in FIG. 1A, showing the anchor bodies in an expanded configuration and in an approximated position;

FIG. 1C is a side elevation view of an anchor assembly including the anchor bodies illustrated in FIG. 1A and a connector member configured to attach actuation portions of the anchor bodies, showing the anchor bodies in the first configuration;

FIG. 1D is a side elevation view of the anchor assembly illustrated in FIG. 1C, showing the connector member tightened with the anchor bodies in the expanded configuration;

FIG. 1E is a side elevation view of an anchor assembly similar to FIG. 1C, but including an integral connector member;

FIG. 1F is a side elevation view of the anchor assembly illustrated in FIG. 1E, showing the connector member tightened with the anchor bodies in the expanded configuration;

FIG. 1G is a schematic side elevation view of an anchor assembly including a pair of anchor bodies constructed in accordance with an alternative embodiment, shown implanted across an anatomical defect and shown in a first configuration;

FIG. 1H is a schematic side elevation view of the anchor assembly illustrated in FIG. 1G, showing the anchor bodies in an expanded configuration and in an approximated position;

FIG. 2A is a side elevation view of an anchor assembly including first and second anchors implanted in an anatomical structure on opposed sides of an anatomical defect and shown in a first configuration;

FIG. 2B is a side elevation view of the anchor assembly illustrated in FIG. 2A, showing the first and second anchors in respective expanded configurations;

FIG. 2C is a side elevation view of the anchor assembly illustrated in FIG. 2A, including a connector member that attaches the first anchor to the second anchor;

FIG. 3A is a side elevation view of a fixation kit including at least one anchor and an insertion instrument;

FIG. 3B is a sectional side elevation view of the fixation kit illustrated in FIG. 3A;

FIG. 4A is a sectional elevation view of a fixation kit constructed in accordance with an alternative embodiment, shown in a first rotative state;

FIG. 4B is a sectional side elevation view of the kit illustrated in FIG. 4A, taken along line 4B-4B;

FIG. 4C is a sectional side elevation view of the fixation kit as illustrated in FIG. 4A, but shown in a second rotative state whereby a pair of apertures is aligned;

FIG. 4D-sectional side elevation view of the fixation kit illustrated in FIG. 4C, taken along line 4D-4D;

FIG. 5A is a sectional side elevation view of an insertion instrument during assembly;

FIG. 5B is a sectional side elevation view of the insertion instrument illustrated in FIG. 5A, but shown assembled;

FIG. 5C is a sectional side elevation view of a handle of the insertion instrument illustrated in FIG. 5B;

FIG. 5D is a perspective view of the handle illustrated in FIG. 5C;

FIG. 6 is a side elevation view of the fixation kit constructed in accordance with another embodiment;

FIG. 7A is a perspective view of a fixation kit including an insertion instrument constructed in accordance with an alternative embodiment including a casing and a cannula extending from the casing, the instrument shown in a first configuration with first and second anchor bodies loaded in the insertion instrument;

FIG. 7B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 7A;

FIG. 7C is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 7A;

FIG. 7D is an enlarged sectional side elevation view of the cannula of the insertion instrument illustrated in FIG. 7A;

FIG. 8A is a perspective view of the fixation kit illustrated in FIG. 7A, showing the insertion instrument in the second position so as to eject the second anchor body from the insertion instrument, the second anchor body shown in a first configuration

FIG. 8B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 8A;

FIG. 8C is a sectional side elevation view of the casing illustrated in FIG. 8A;

FIG. 8D is a sectional side elevation view of the cannula illustrated in FIG. 8A;

FIG. 9A is a perspective view of the fixation kit illustrated in FIG. 8A, showing the insertion instrument in an offset position;

FIG. 9B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 9A

FIG. 9C is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 9A;

FIG. 9D is a sectional side elevation view of the cannula of the insertion instrument illustrated in FIG. 9A;

FIG. 9E is a perspective view of the fixation kit illustrated in FIG. 9A, showing the second anchor body in an expanded configuration;

FIG. 10A is a perspective view of the fixation kit illustrated in FIG. 9A, showing the insertion instrument in an intermediate position upon completion of an intermediate stroke;

FIG. 10B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 10A

FIG. 10C is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 10A;

FIG. 10D is a sectional side elevation view of the cannula of the insertion instrument illustrated in FIG. 10A

FIG. 11A is a perspective view of the fixation kit illustrated in FIG. 10A, showing the insertion instrument upon completion of a first portion of a second stroke after the intermediate stroke;

FIG. 11B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 11A

FIG. 11C is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 11A;

FIG. 11D is a sectional side elevation view of the cannula of the insertion instrument illustrated in FIG. 11A;

FIG. 12A perspective view of the fixation kit illustrated in FIG. 11A, showing the insertion instrument in a third position upon completion of a second portion of the second stroke, ejecting a first anchor body from the insertion instrument, the first anchor body shown in a first configuration;

FIG. 12B is an enlarged perspective view of the cannula of the insertion instrument illustrated in FIG. 12A;

FIG. 12C is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 12A;

FIG. 12D is a sectional side elevation view of the cannula of the insertion instrument illustrated in FIG. 12A;

FIG. 12E is a perspective view of the fixation kit similar to FIG. 12A, but showing the first anchor body in an expanded configuration;

FIG. 12F is a sectional side elevation view of the casing of the insertion instrument illustrated in FIG. 12A, after release of a strand retention mechanism;

FIG. 13A is a perspective view of the insertion instrument illustrated in FIG. 7A, with portions removed so as to illustrate a guide system when the instrument is in the first position;

FIG. 13B is a perspective view of the insertion instrument illustrated in FIG. 8A, showing the guide system when the instrument is in the second position;

FIG. 13C is a perspective view of the insertion instrument illustrated in FIG. 9A, with portions removed so as to illustrate the guide system when the insertion instrument is in the offset position;

FIG. 13D is a perspective view of the insertion instrument illustrated in FIG. 10A, with portions removed so as to illustrate the guide system when the insertion instrument is in the intermediate position;

FIG. 13E is a perspective view of the insertion instrument illustrated in FIG. 11A, with portions removed so as to illustrate the guide system when the insertion instrument has completed the first portion of the second stroke;

FIG. 13F is a perspective view of the insertion instrument illustrated in FIG. 12A, with portions removed so as to illustrate the guide system when the insertion instrument has completed the second portion of the second stroke;

FIG. 13G is a perspective view of a guide track of the guide system illustrated in FIG. 13A;

FIG. 14A is a perspective view of a coupling assembly constructed in accordance with one embodiment,

FIG. 14B is a sectional side elevation view of the coupling assembly illustrated in FIG. 14A, shown in a first mode of operation;

FIG. 14C is a sectional side elevation view of the coupling assembly illustrated in FIG. 14B, shown in a transition between the first mode of operation and a second mode of operation;

FIG. 14D is a sectional side elevation view of the coupling assembly illustrated in FIG. 14C, shown in the second mode of operation.

FIG. 15A is a sectional side elevation view of the insertion instrument constructed in accordance with another embodiment, showing a coupling assembly disposed in a first mode of operation;

FIG. 15B is a sectional end elevation view of the coupling assembly illustrated in FIG. 15A, taken along line 15B-15B;

FIG. 15C is a sectional side elevation view of the insertion instrument illustrated in FIG. 15A, but showing the coupling assembly transitioning from the first mode of operation to a second mode of operation;

FIG. 15D is a sectional end elevation view of the coupling assembly illustrated in FIG. 15C, taken along line 15D-15D;

FIG. 15E is a sectional side elevation view of the insertion instrument illustrated in FIG. 15C, but showing the coupling assembly in the second mode of operation;

FIG. 16A is a schematic side elevation view of the anchor assembly as illustrated in FIG. 1G, including a tensioning strand in accordance with an alternative embodiment, showing on of the anchor bodies implanted in the first configuration;

FIG. 16B is a schematic side elevation view of the anchor assembly as illustrated in FIG. 16A, but showing the implanted anchor body in the expanded configuration;

FIG. 16C is a schematic side elevation view of the anchor assembly as illustrated in FIG. 16B, showing the other anchor body implanted in the first configuration;

FIG. 16D is a schematic side elevation view of the anchor assembly as illustrated in FIG. 16C, showing the other anchor body in the expanded configuration;

FIG. 16E is a schematic side elevation view of the anchor assembly as illustrated in FIG. 16D, showing locking of the locking member;

FIG. 16F is a schematic side elevation view of the anchor assembly as illustrated in FIG. 16E, show in a final assembled configuration;

FIG. 17A is a perspective view of a strand retention assembly constructed in accordance with one embodiment, showing a releasable locking member;

FIG. 17B is a perspective view of the strand retention assembly illustrated in FIG. 17A, showing a fixed locking member;

FIG. 17C is a perspective view of the strand retention assembly illustrated in FIG. 17A, operably coupled to an actuator;

FIG. 17D is a perspective view of the strand retention assembly illustrated in FIG. 17C, shown in a released position;

FIG. 18A is a schematic side elevation view of the anchor assembly as illustrated in FIG. 1G, including a pair of tensioning strands in accordance with an alternative embodiment, showing the anchor bodies in the first configuration;

FIG. 18B is a schematic side elevation view of the anchor assembly as illustrated in FIG. 18A, but showing the anchor bodies in the expanded configuration;

FIG. 18C is a schematic side elevation view of the anchor assembly as illustrated in FIG. 18B, showing actuation of a locking member and approximation of an anatomical gap;

FIG. 18D is a schematic side elevation view of the anchor assembly as illustrated in FIG. 18C, showing locking of the locking member;

FIG. 18E is a schematic side elevation view of the anchor assembly as illustrated in FIG. 18D, show in a final assembled configuration;

FIG. 19A is a schematic sectional side elevation view of a retention assembly of the insertion instrument constructed in accordance with another embodiment, shown in a locked configuration;

FIG. 19B is a schematic sectional side elevation view of a retention assembly of the insertion instrument illustrated in FIG. 19A, shown in an unlocked configuration;

FIG. 19C is a sectional side elevation view of the casing of an insertion instrument similar to the insertion instrument as illustrated in FIG. 12C, but including a retention assembly constructed in accordance with an alternative embodiment;

FIG. 20A is a sectional side elevation view of the insertion instrument including a cutting assembly in accordance with another embodiment, showing the cutting assembly in a disengaged position;

FIG. 20B is a sectional side elevation view of the insertion instrument as illustrated in FIG. 20A, but showing the cutting assembly in an engaged position;

FIG. 21A is a sectional side elevation view of the insertion instrument as illustrated in FIG. 20A, but including a cutting assembly constructed in accordance with another embodiment, shown in a disengaged position;

FIG. 21B is a sectional side elevation view of the insertion instrument as illustrated in FIG. 21A, but showing the cutting assembly in an engaged position;

FIG. 22A is a perspective view of the insertion instrument illustrated in FIG. 7A, but constructed in accordance with an alternative embodiment, shown in the first position;

FIG. 22B is a side elevation view of the insertion instrument as illustrated in FIG. 22A;

FIG. 22C is a side elevation view of the insertion instrument illustrated in FIG. 22B, but shown in a second position;

FIG. 22D is a side elevation view of the insertion instrument illustrated in FIG. 22C, but shown in a third position;

FIG. 23A is a perspective view of an insertion instrument constructed similar to the insertion instrument illustrated in FIG. 7A, but constructed in accordance with another embodiment, and shown in a first position;

FIG. 23B is a perspective view of a plunger of the insertion instrument illustrated in FIG. 23A;

FIG. 23C is a perspective view of a distal end of the insertion instrument illustrated in FIG. 23A;

FIG. 23D is a perspective view of various components of the insertion instrument illustrated in FIG. 23A, including the plunger illustrated in FIG. 23B, a push rod, and a pair of first coupling members;

FIG. 23E is a perspective view of a second coupling member configured to engage the first coupling members illustrated in FIG. 23D;

FIG. 23F is a perspective view of the insertion instrument illustrated in FIG. 23A, shown in a second position;

FIG. 23G is a perspective view of the insertion instrument illustrated in FIG. 23F, shown in an intermediate position;

FIG. 23H is a perspective view of the insertion instrument illustrated in FIG. 23G, shown in a third position;

FIG. 24A is a perspective view of an insertion instrument including first and second pusher assemblies disposed in a side-by-side relationship, showing each of the pusher assemblies in a first position;

FIG. 24B is a perspective view of the insertion instrument illustrated in FIG. 24A, after removal of a first lockout tab from the first pusher assembly;

FIG. **24**C is a perspective view of the insertion instrument illustrated in FIG. **24**B, after actuation of the first pusher assembly to a second position;

FIG. **24**D is a perspective view of the insertion instrument illustrated in FIG. **24**C, after removal of a second lockout tab from the second pusher assembly;

FIG. **24**E is a perspective view of the insertion instrument illustrated in FIG. **24**D, after actuation of a swap actuator;

FIG. **24**F is a perspective view of the insertion instrument illustrated in FIG. **24**E, after actuation of the second pusher assembly to a second position;

FIG. **25**A is a perspective view of components of the insertion instrument illustrated in FIG. **24**A, showing each of the first and second pusher assemblies in the first position;

FIG. **25**B is a perspective view of the components of the insertion instrument illustrated in FIG. **25**A, after the first pusher assembly has been actuated to the second position;

FIG. **25**C is a perspective view of the components of the insertion instrument illustrated in FIG. **25**B, after actuation of the swap actuator;

FIG. **25**D is a perspective view of the components of the insertion instrument illustrated in FIG. **25**C, after the second pusher assembly has been actuated to the second position;

FIG. **26**A is a perspective view of a retention assembly constructed in accordance with one embodiment;

FIG. **26**B is an enlarged perspective view of a portion of the retention assembly illustrated in FIG. **26**A;

FIG. **27**A is a perspective view of an insertion instrument constructed in accordance with another embodiment, the insertion instrument including first and second pusher assemblies disposed in a side-by-side relationship, showing each of the pusher assemblies in a first position;

FIG. **27**B is a perspective view of the insertion instrument illustrated in FIG. **27**A, after actuation of the first pusher assembly to a position configuration;

FIG. **27**C is a perspective view of the components of the insertion instrument illustrated in FIG. **27**B, after actuation of the swap actuator from a first position to an actuated position;

FIG. **27**D is a perspective view of the insertion instrument illustrated in FIG. **27**C, after actuation of the second pusher assembly to a second position;

FIG. **28**A is a perspective view of components of the insertion instrument illustrated in FIG. **27**A, shown with the swap actuator in the first position;

FIG. **28**B is a perspective view of components of the insertion instrument illustrated in FIG. **28**A, shown with the swap actuator in the second position;

FIG. **29**A is a perspective view of an insertion instrument constructed in accordance with another embodiment, the insertion instrument including first and second pusher assemblies disposed in a side-by-side relationship, showing each of the pusher assemblies in a first position;

FIG. **29**B is an end elevation view of the insertion instrument illustrated in FIG. **29**A;

FIG. **29**C is a perspective view of the insertion instrument illustrated in FIG. **29**A, showing the first pusher assembly in a second position;

FIG. **29**D is a perspective view of the insertion instrument illustrated in FIG. **29**C, after actuation of a swap actuator from a first position to a second position;

FIG. **29**E is a perspective view of the insertion instrument illustrated in FIG. **29**D, after removal of a lockout tab from the second pusher assembly;

FIG. **29**F is a perspective view of the insertion instrument illustrated in FIG. **29**E, showing the second pusher assembly in a second position;

FIG. **29**G is a schematic sectional end elevation view of the insertion instrument illustrated in FIG. **29**D, showing a portion of the swap actuator;

FIG. **30**A is a perspective view of an insertion instrument constructed in accordance with another embodiment, the insertion instrument including first and second reciprocally movable cannulas, the drawing showing a portion of the casing cut away so as to expose internal components of the insertion instrument;

FIG. **30**B is a perspective view of a reciprocal motion assembly of the insertion instrument illustrated in FIG. **30**A, the reciprocal motion assembly configured to reciprocally drive the first and second cannulas;

FIG. **30**C is a perspective view of a drive member of the reciprocal motion assembly illustrated in FIG. **30**B;

FIG. **30**D is a perspective view of a selective plunger engagement assembly configured to selectively move the plunger between operably communication with the first and second cannulas; and

FIG. **31** is a perspective view of an insertion instrument, wherein the cannula defines a side ejection port in accordance with another embodiment.

DETAILED DESCRIPTION

Referring initially to FIGS. **1**A-B, an anchor assembly **20** can include at least one expandable anchor **22** such as a first expandable anchor **22***a* and a second expandable anchor **22***b* that, in turn, include respective anchor bodies **28***a* and **28***b* that are configured to be secured to an anatomical location, which can be defined by at least one anatomical structure **24**. The anatomical structure **24** can be defined by, for instance, anatomy of a human or other animal, or an implant that is secured or configured to be secured to anatomy of a human or other animal. The anatomy can be defined by tissue that can include at least one of bone and soft tissue such as a tendon, a ligament, cartilage, the annulus of an intervertebral disc, or the like.

In accordance with one embodiment, the at least one anatomical structure **24** can define first and second target anatomical locations **24***a* and **24***b* on opposite sides of a gap, such as a gap **24***c*. Thus, the gap **24***c* can be disposed in an anatomical structure, and can for instance define an anatomical defect, or can be disposed between different anatomical structures. First and second anchors **22***a* and **22***b* can be injected or otherwise driven or inserted into the respective first and second target anatomical locations **24***a* and **24***b* on opposite sides of the gap **24***c*, and subsequently drawn toward each other so as to approximate the gap **24***c*. Alternatively or additionally still, the anchor assembly **20** can be configured to secure an auxiliary structure to the anatomical structure. In this regard, it should be further appreciated that the anchor assembly **20** can include any number of anchors **22** as desired.

Each anchor body **28***a* and **28***b* can include a respective expandable portion **36***a* and **36***b*, and an actuation member **37***a* and **37***b*, such as an actuation strand **38***a* and **38***b*, that is configured to actuate the respective expandable portion **36***a* and **36***b*, and thus the respective anchor body **28***a* and **28***b*, from a first configuration illustrated in FIG. **1**A, whereby the anchor body **28***a* and **28***b* is initially placed at the target anatomical location, to an expanded configuration illustrated in FIG. **1**B, whereby the respective anchor body **28***a* and **28***b* can be secured to the anatomical structure **24**. Thus, the anchor bodies **28***a* and **28***b* of the anchors **22***a* and **22***b* can be inserted through an opening **23** at the respective target anatomical locations **24***a* and **24***b* that can be created, for example, when delivering the anchor bodies **28***a* and **28***b* to the respective target anatomical locations **24***a* and **24***b*, for instance by injecting the anchor bodies **28***a* and **28***b* to the respective target anatomical locations **24***a* and **24***b*.

The expandable portion **36** of the anchor body **28** extends along the direction of elongation **34** so as to define an initial distance D**1** as measured from the proximal end **39***a* to the distal end **39***b* along the direction of elongation **34** when in the first configuration. The initial distance D**1** can be any length as desired, such within a range having a lower end that can be defined by approximately 5 mm, alternatively approximately 10 mm, alternatively still approximately 20 mm, and alternatively still approximately 24.5 mm, and having an upper end that can be defined by approximately 50 mm, alternatively approximately 40 mm, alternatively still approximately 30 mm, and alternatively still approximately 25.5 mm.

Furthermore, when in the first configuration, the expandable portion **36** defines an initial maximum thickness T**1** that extends in a second direction **35** that is substantially perpendicular, with respect to the direction of elongation **34**. The initial maximum thickness T**1** can be sized as desired. As illustrated in FIG. **1**B, when the expandable portion **36** in the expanded configuration, the expandable portion **36** is collapsed, for instance compressed or tangled, along the direction of elongation **34** to a second distance D**2** as measured from the proximal end **39***a* to the distal end **39***b* along the direction of elongation **34**. The second distance D**2** can be less than the initial distance D**1**. As the expandable portion **36** collapses along the direction of elongation, for instance as it is actuated from the first configuration to the expanded configuration, the expandable portion **36** expands along the second direction **35** to a second maximum thickness T**2** that is greater than the initial maximum thickness T**1**. The second maximum thickness T**2** extends along the second direction **35** which is substantially perpendicular to the direction of elongation **34**.

The maximum thicknesses T**1** and T**2** in the second direction **35** can be defined such the anchor body **28** does not define a thickness in the second direction **35** that is greater than the maximum thicknesses T**1** and T**2**, respectively. It should be appreciated that the proximal and distal ends **39***a* and **39***b* can change locations on the expandable portion **36** as the expandable portion **36** actuates to the expanded configuration, for instance due to configuration of the expandable portion **36** when in the expanded configuration. However, when the expandable portion **36** is in the expanded configuration, the proximal and distal ends **39***a* and **39***b* continue to define the proximal-most and distal-most ends of the expandable portion **36**, such that the distance D**2** along the direction of elongation **34** is defined linearly between the proximal and distal ends **39***a* and **39***b* of the expandable portion **36** when the expandable portion **36** is in the expanded configuration.

Each of the actuation strands **38** of the first and second anchors **22***a* and **22***b* can be attached to each other. For instance, the actuation strand **38** of the first anchor **22***a* can be integral with the actuation strand **38** of the second anchor **22***b*. Alternatively, as will be described in more detail below with reference to FIGS. **2**A-C, the actuation strand **38** of the first anchor **22***a* can be separate from the actuation strand **38** of the second anchor **22***a*, such that the actuation strands **38** of the first and second anchors **22***a* and **22***b* are subsequently attached, directly or indirectly, using any suitable connector member **63**. The connector member **63** can be integral with either or both of the actuation strands **38***a* and **38***b* or can be separately attached to each of the actuation strands **38***a* and **38***b*. In accordance with one embodiment, the actuation strands **38***a* and **38***b* of each of the first and second anchors **22***a* and **22***b* defines at least one respective actuation portion **131***a* and **131***b* and can further include at least one respective attachment portion **133***a* and **133***b*. The actuation portions **131***a* and **131***b* are each configured to receive an actuation force that causes the respective anchor **22***a* and **22***b* to actuate from the first configuration to the expanded configuration.

In accordance with the illustrated embodiment, the attachment portions **133***a* and **133***b* of the actuation strands **38***a* and **38***b* of the first and second anchors are configured to be attached to each other so as to span across the gap **24***c* and attach the first anchor body **28***a* to the second anchor body **28***b*. The attachment portions **133***a* and **133***b* can be integral with each other, or attached to each other using any suitable connector member. Furthermore, in accordance with the illustrated embodiment, the actuation portions **131***a* and **131***b* can also define attachment portions that are configured to be attached to each other in any suitable manner, either before or after the actuation force F is applied to the actuation portions **131***a* and **131***b*. Thus, the attachment portion **133***a* and **133***b* of a respective anchor **22***a* and **22***b* is configured to attach the respective anchor to another anchor, such as an attachment portion of the other anchor. Furthermore, the actuation portion **131***a* of the first anchor **22***a* is configured to attach the respective anchor **22***a* to the second anchor **22***b*. In accordance with the illustrated embodiment, the attachment portion **133***a* of the actuation strand **38***a* of the first anchor **22***a* is integral with the attachment portion **133***b* of the actuation strand **38***b* of the second anchor **22***b*, though it should be appreciated that the attachment portions **133***a-b* of the first and second anchors **22***a-b* can be separate from each other and attached to each other, as described in more detail below.

With continuing reference to FIGS. **1**A-B, once the expandable portions **36***a-b* of the anchors **22***a-b* have actuated to the expanded configuration, the actuation strands **38***a-b* can be placed in tension. For instance, in accordance with one embodiment, an approximation Force AF can be applied to either or both of the actuation portion **131***a-b* of the actuation strands **38***a-b* of the first and second anchors **22***a-b*, thereby inducing a tension in the actuation strands **38***a-b* of the first and second anchors **22***a-b* so as to apply a biasing force that draws the first and second anchors **22***a* and **22***b* toward each other. Accordingly, if a gap **24***c* is disposed between the first and second anchors **22***a* and **22***b*, movement of the anchors **22***a* and **22***b* toward each other in response to the biasing force approximates the gap **24***c* which, in certain embodiments, can be an anatomical defect, such as a tissue defect as described above.

Furthermore, when the actuation strands **38***a-b* are maintained in tension after the defect **24** has been approximated, the anchor bodies **28***a-b* are prevented from backing out from the anatomy through the respective target locations **24***a-b*, which could allow the gap **24***c* to open. Thus, once the gap **24***c* has been approximated, the actuation strand **38***a* of the first anchor **22***a* can be attached to the actuation strand **38***b* of the second anchor **22***b* so as to maintain tension between the first and second anchors **22***a* and **22***b* and prevent the first and second anchors **22***a* and **22***b* from separating.

The anchor bodies **28***a* and **28***b* can be constructed by weaving any suitable substrate, such as a strand, for instance a strand of suture, in any manner desired so as to produce a plurality of openings **43** that extend through the respective anchor bodies **28***a* and **28***b*. The first and second actuation strands **38***a* and **38***b* can be woven through at least two of the openings **43** along the direction of elongation **34** of the anchor bodies **28***a* and **28***b*.

In accordance with the embodiment illustrated in FIGS. **1**A-**1**F, the first and second actuation strands **38***a* and **38***b* are integral with the respective first and second anchor bodies **28***a* and **28***b*. In accordance with other embodiments, the first and second actuation strands **38***a* and **38***b* are illustrated as separate from and attached to the respective first and second anchor bodies **28***a* and **28***b* (see FIG. **2**C). In accordance with still other embodiments, one of the first and second actuation strands **38***a* and **38***b* is integral with the respective anchor body and the other of the first and second actuation strands **38***a* and **38***b* is separate from and attached to the respective anchor body. In accordance with embodiments whereby the first and second actuation strands **38***a* and **38***b* are illustrated and described as integral with the respective first and second anchor bodies **28***a* and **28***b*, it should be appreciated that the first and second actuation strands **38***a* and **38***b* can alternatively be separate from and attached to the respective first and second anchor bodies **28***a* and **28***b*, unless otherwise indicated. Furthermore, in accordance with embodiments whereby the first and second actuation strands **38***a* and **38***b* are illustrated and described as separate from and attached to the respective first and second anchor bodies **28***a* and **28***b*, it should be appreciated that the first and second actuation strands **38***a* and **38***b* can alternatively be integral with the respective first and second anchor bodies **28***a* and **28***b*, unless otherwise indicated.

Referring to FIGS. **1**C-**1**F, the anchor assembly **20** can include at least one connector member **63** that is configured to join the anchors **22** and allow a biasing force to be applied to at least one of the anchors **22***a* and **22***b* that draws the anchors **22***a* and **22***b* together, thereby approximating the anatomical defect **24**. The connector member **63** can be integral with one or both of the first and second anchors **22***a* and **22***b*, for instance integral with one or both of the first and second actuation strands **38***a* and **38***b*, can be integral with one or both of the first and second anchor bodies, or can be separate from and attached (directly or indirectly) to one or both of the first and second anchors **22***a* and **22***b*. For instance, the connector member **63** can be separate from and attached between the first and second anchors **22***a* and **22***b*, as will be described in more detail below. While connector members **63** are described herein in accordance with various embodiments, it should be appreciated that the anchor assembly **20** can alternatively include any suitable connector member configured to attach the first anchor **22***a* to the second anchor **22***b*.

The anchor assembly **20** can include a connector member **63** that is integral with the corresponding actuation strands **38***a* and **38***b*. As described above, each of the first and second anchor bodies **28***a* and **28***b* can be implanted at respective first and target anatomical locations **24***a* and **24***b* that are disposed on opposite sides of a gap **24***c* as illustrated in FIG. **2**A. Each of the first and second actuation strands **38***a* and **38***b* can receive an actuation force F substantially along the direction of elongation **34** that causes the respective first and second anchor bodies **28***a* and **28***b*, and in particular the respective expandable portions **36***a* and **36***b*, to actuate from the first configuration to the expanded configuration so as to fix the first and second anchor bodies **28***a* and **28***b* at the respective first and second target anatomical locations **24***a* and **24***b*. The actuation force F applied to each of the actuation strands **38***a* and **38***b* can be in the form of different actuation forces, or can be the same actuation force.

For instance, referring to FIGS. **1**C-**1**D, the connector member **63** can be configured as an auxiliary connector member **77**, that is a connector member that is separate from one or both of the first and second actuation strands **38***a* and **38***b* and configured to attach to the first and second actuation strands **38***a* and **38***b* to each other. For instance, the auxiliary connector member **77** can be made from any suitable metal, plastic, or any alternative biocompatible material, and can be configured as a body **146**, which can be flexible or rigid, that is configured to attach to either or both of the first actuation strands **38***a* and **38***b*, and in particular to the actuation portions **131***a-b*, at a location between the anchors **22***a* and **22***b*. For instance, each of the first and second actuation portions **131***a-b* can be stitched through the body **146** and tied about the body **146** so as to define a knot **148** that can be actuated from an unlocked configuration to a locked configuration. The first and second actuation portions **131***a-b* are slidable with respect to the body **146** when the knots **148** are in the unlocked configuration, and fixed with respect to sliding movement relative to the body **146** when the knots **148** are in the locked configuration. The body **146** can define any shape as desired, such as substantially cylindrical, and can be flexible or substantially rigid as desired.

During operation, the actuation portions **131***a-b* can be stitched through the body **146** along a direction away from the anatomical structure **24** and tied about the body **146** such that the respective knots **148** are in the unlocked configuration. The body **146** can be oriented such that its long axis **149** is oriented substantially parallel to the anatomical structure **24**. The body **146** can be translated along the first and second actuation strands **38***a* and **38***b* along the direction of Arrow **150** toward the anatomical structure **24** while the actuation strands **38***a* and **38***b* are under tension, which causes the actuation strands **38***a* and **38***b* to translate relative to the body **146** along an opposite direction indicated by Arrow **152**. As the body **146** translates along the actuation strands **38***a* and **38***b* toward the gap **24***c*, the body **146** applies the actuation force F to the actuation strands **38***a* and **38***b*, thereby causing the anchors **22***a* and **22***b* to actuate from the first configuration to the expanded configuration.

As the body **146** further translates toward the gap **24***c* after the anchors **22***a* and **22***b* have been actuated to their expanded configuration, the body **146** applies the approximation force AF to at least one or both of the actuation strands **38***a* and **38***b* that draws at least one or both of the anchors **22***a* and **22***b* inward toward the other, thereby approximating the gap **24***c*. In this regard, it should be appreciated that the approximation force AF can be a continuation of the actuation force F. Alternatively, the actuation force F can be applied to the actuation strands **38***a* and **38***b* at a location upstream of the body **146**, or prior to attaching the actuation strands **38***a* and **38***b* to the body **146**. The knot **148** can then be tightened so as to secure the first and second actuation strands **38***a* and **38***b* to the body **146**, and therefore also to each other so as to prevent separation of the first and second anchors **22***a* and **22***b*. Once the gap **24***c* has been approximated, the body **146**, and thus the knots **148**, can be disposed along the outer surface of the anatomical structure **24**. Alternatively, the body **146** can be sized such that a portion of the body **146**, and thus the knots **148**, is disposed in the opening **23** that receives the anchor bodies **28***a* and **28***b* once the gap **24***c* has been approximated. Accordingly, the knots **148** can be disposed behind the anatomical structure **24**, or can be embedded in the anatomical structure **24**.

The body **146** can thus define a sliding member **47** that allows one of the first and second actuation strands **38***a* and **38***b* to slide with respect to the other of the first and second actuation strands **38***a* and **38***b* so as to approximate the gap **24***c*, and can further define a locking member **64** that secures the first and second actuation strands **38***a* and **38***b* to each other, for example with respect with respect to relative movement that would allow the first and second anchor bodies **28***a* and **28***b* to separate.

Referring now to FIGS. **1**E-**1**F, the anchor assembly **20** can include a pair of connector members **63***a* and **63***b* configured to attach at least one or both of the actuation portions **131***a* and **131***b* to the respective attachment portions **133***a* and **133***b*. In accordance with the illustrated embodiment, the actuation strands **38***a* and **38***b* are defined by a common actuation member, such as a common strand, which can be an auxiliary strand **33** that is separate from, and woven through, at least one such as a pair or a plurality of openings of both the first and second anchor bodies **28***a-b*, such that the respective attachment portions **133***a* and **133***b* are integral with each other. Thus, in accordance with the illustrated embodiment, the first and second actuation strands **38***a* and **38***b* are integral with each other. The anchor assembly **20** can include first and second connector members **63***a* and **63***b* that are defined by the actuation strands **38***a* and **38***b*, and are configured to attach the actuation portions **131***a* and **131***b* to other locations of the common strand, and thus to each other. In accordance with the illustrated embodiment, the first and connector member **63***a* can attach the corresponding first actuation portion **131***a* to another location of the auxiliary strand **33** that is spaced from the first actuation portion **131***a*. Likewise, the second and connector member **63***b* can attach the corresponding second first actuation portion **131***b* to another location of the auxiliary strand **33** that is spaced from the second first actuation portion **131***b*. For instance, in accordance with the illustrated embodiment, the first connector member **63***a* attaches the first actuation portion **131***a* to the first attachment portion **133***a*, and the second connector member **63***b* attaches the second actuation portion **131***b* to the second attachment portion **133***b*.

Thus, it can be said that at least one connector member, such as the first and second connector members **63***a* and **63***b*, can attach the first and second actuation portions **131***a* and **131***b* to respective other locations of the auxiliary strand **33** so as to attach the first and second actuation portions **131***a* and **131***b* to each other, for instance indirectly through at least one or both of the attachment portions **133***a* and **133***b*. It can further be said that the first connector member **63***a* operably attaches one portion of the first actuation strand **38***a* to another location of the actuation strand **38***a*, and the second connector member **63***b* operably attaches one portion of the second actuation strand **38***b* to another location of the second actuation strand **38***b*. Alternatively, it should be appreciated that the first and second connector members **63***a* and **63***b* can attach the respective first and second actuation portions **131***a* and **131***b* to the anchor body **28**, such as at respective first and second end portions **52** and **54**. While the actuation strands **38***a* and **38***b* are illustrated as separate from each other, the actuation strands **38***a* and **38***b* can alternatively be attached to each other, for instance via any suitable connector member **63** of the type described herein, so as to define an outer connector strand.

In accordance with the illustrated embodiment, each of the first and second connector members **63***a* and **63***b* can be configured as respective knots **66***a* and **66***b* that are defined by the auxiliary strand **33**. In accordance with the illustrated embodiment, the first knot **66***a* includes a post end **68**, which can be defined by the actuation portion **131***a* of the first actuation strand **38***a*, and a free end, which can include a static portion **70***a* that is defined by a first end **137***a* of the first attachment portion **133***a* and a free portion **70***b* that is defined by a second end **139***a* of the first attachment portion **133***a*. The first end **137***a* can be disposed between the knot **66***a* and the first anchor body **28***a*, and the second end **139***a* can be disposed between the knot **66***a* and the second connector member **63***b*. Alternatively, the free portion **70***b* can be defined by the attachment portion **133***b* of the second actuation strand **38***b*.

In accordance with one embodiment, the second knot **66***a* includes a post end **68**, which can be defined by the actuation portion **131***b* of the second actuation strand **38***b*, and a free end, which can include a static portion **70***a* that is defined by a first end **137***b* of the second attachment portion **133***b* and a free portion **70***b* that is defined by a second end **139***b* of the second attachment portion **133***b*. The first end **137***b* can be disposed between the knot **66***b* and the second anchor body **28***b*, and the second end **139***b* can be disposed between the knot **66***b* and the first connector member **63***a*. Alternatively, the free portion **70***b* can be defined by the attachment portion **133***a* of the first actuation strand **38***a*. The attachment portions **133***a* and **133***b* are illustrated as being integral with each other, though it should be appreciated that the attachment portions **133***a* and **133***b* can be separate and attached to each other as desired.

Each of the first and second knots **66***a* and **66***b* can define respective sliding members **47** that allow the respective post ends **68** to translate therethrough relative to the free ends. Thus, the sliding members **47** allow the first and second actuation portions **131***a* and **131***b* to translate relative to the first and second attachment portions **133***a* and **133***b*, for instance in response to the applied actuation force F when the knots **66***a* and **66***b* are in unlocked configurations, thereby actuating the respective anchor body **28***a* and **28***b* from the first configuration to the expanded configuration. Each knot **66** further defines a locking member **64** that can be actuated to a locked configuration so as to secure the at least one or both of the anchors **22***a* and **22***b* in their respective biased positions. For instance, a tensile locking force can be applied to the free portions **70***b* of the free ends of the knots **66***a* and **66***b* so as to prevent the actuation portions **131***a* and **131***b* from translating through the knots **66***a* and **66***b* relative to the attachment portions **133***a* and **133***b*.

The first and second knots **66***a* and **66***b* can be spaced apart a fixed distance L along the auxiliary strand **33**, such that the gap **24***c* is maintained approximated when the anchor bodies **22***a* and **22***b* are inserted into the respective target anatomical locations **24***a* and **24***b*. For instance, the gap **24***c* can be approximated prior to injecting the knots **66***a* and **66***b* into the respective target anatomical locations **24***a* and **24***b*. During operation, once the first and second anchors **22***a* and **22***b* are implanted at the respective first and second target anatomical locations **24***a* and **24***b*, the knots **66***a-b* can be in an unlocked configuration such that application of the actuation force F to the respective actuation strands **38***a-b*, for instance the actuation portions **131***a-b*, causes the respective anchor bodies **28***a-b* to actuate from the first configuration to the expanded configuration. Next, a tensile locking force can be applied to the respective attachment portions **133***a-b* against the corresponding knots **66***a-b*, so as to actuate the knots **66***a-b* to their locked configurations and maintain the anchor **22***a-b* in their expanded configurations.

The distance L between the first and second knots **66***a* and **66***b* can be substantially equal to or less than the distance between the target anatomical locations **24***a* and **24***b*, such that the gap **24***c* is approximated when the first and second anchors **22***a* and **22***b* are expanded behind the anatomy and joined by the auxiliary strand **33**, such that tension induced in the actuation strands **38***a* and **38***b* maintains the approximation of the gap **24***c*. While the first and second connector members **63***a-b* can be configured as respective knots **66**, it should be appreciated that either or both of the first and second connector members **63***a* and **63***b* can be alternatively configured as any suitable locking member **63** of any type described herein or any suitable alternatively constructed locking member. For instance, at least one or both of the connector members **63***a-b* can define a splice, whereby the respective actuation strands **38***a-b* can be spliced through the other of the actuation strands **38***a-b* or itself, and the connector strand is placed in tension after actuation of the anchors **22***a* and **22***b* so as to apply a compressive force that prevents translation of the anchor strands **38***a-b*.

It should be appreciated that the anchor bodies **28***a* and **28***b* can be constructed in accordance with any suitable embodiment as desired. For instance, referring now to FIGS. **1**G-**1**H, each of the anchor bodies **28***a* and **28***b* can include an eyelet **90** that extends from a distal end of the respective expandable portions **36***a* and **36***b*. The actuation strand **38** can be configured as an auxiliary strand **33** that is separate from the anchor bodies **28**. The actuation strand can be woven through the anchor bodies **28***a* and **28***b*, and can extend through the respective eyelets **90***a* and **90***b* so as to define a path for the eyelets **90***a* and **90***b* to travel through the respective anchor bodies **28***a* and **28***b* when the anchor bodies **28***a* and **28***b* are actuated from the first configuration to the expanded configuration. The auxiliary strand **33** can thus attach the first anchor body **28***a* to the second anchor body **28***b*, and can further be configured to receive the actuation force F that cases the anchor bodies **28***a* and **28***b* to actuate from the first configuration to the expanded configuration once implanted in the respective target anatomical locations **24***a* and **24***b*.

As described above, the anchor assembly **20** can include any suitable connector member **63** that can be configured to attach to the first and second actuation portions **131***a* and **131***b*, thereby attaching the first and second actuation strands **38***a* and **38***b* to each other, and also attaching the anchors **22***a* and **22***b* to each other. The first and second actuation strands **38***a* and **38***b* are illustrated as integral with each other, and thus define a common actuation strand. Alternatively, the first and second actuation strands **38***a* and **38***b* can be separate from each other and attached to each other in any manner desired.

In accordance with the embodiment illustrated in FIGS. **1**G-H, the connector member **63** is defined by and integral with the first and second actuation strands **38***a* and **38***b*. Thus, the actuation portions **131***a* and **131***b* of the actuation strands **38***a* and **38***b* are attached directly to each other. The connector member **63** can define a sliding member **47** and a locking member **64** at a junction **125**. For instance, the connector member **63** can define a knot **66** that can be constructed as desired, and can be defined by one or both of the actuation strands **38***a* and **38***b*. Thus, at least a portion of the connector member **63** can be integral with at least one or both of the actuation strands **38***a* and **38***b*.

One of the first and second actuation strands **38***a* and **38***b* can define the post end **68** of the knot **66**, and the other of the first and second actuation strands **38***a* and **38***b* can define the free end **70** of the knot **66**. In accordance with the illustrated embodiment, the first actuation strand, such as the first actuation portion **131***a*, defines the post end **68** and the second actuation strand **38***b*, such as the second actuation portion **131***b*, defines the free end **70**.

The first and second actuation strands **38***a* and **38***b* can be tied into the knot **66** prior to applying tension to the actuation strands **38***a* and **38***b* that biases the first and second anchors **22***a* and **22***b* toward each other and approximates the gap **24***c*. Once the knot **66** is formed, and when the knot **66** is in an unlocked configuration, the actuation force F can be applied to the actuation strands **38***a* and **38***b*, and in particular to the actuation portions **131***a-b*, so as to actuate the respective expandable portions **36** from the first configuration to the expanded configuration. Next, the approximation force AF can be applied to the terminal portion **135***a* of the first actuation strand **38***a*, which defines the post strand **68**, thereby causing the post end **68** to slide through the knot **66** and draw the respective anchor, such as the first anchor **22***a*, toward the other anchor, such as the second anchor **22***b*. Once the gap **24***c* has been approximated, the free strand **70***b* of the free end **70**, for instance defined by the terminal portion **135***b* of the second actuation strand **38***b*, can be placed in tension so as to lock knot **66** and prevent the first actuation strand **38***a* from translating through the knot **66**, thereby fixing the actuation strands **38***a* and **38***b* in tension. While the connector member **63** can be configured as the knot **66**, it should be appreciated that the connector member **63** can alternatively be configured in accordance with any embodiment described herein or any suitable alternative connector as desired.

Referring now to FIGS. **2**A-C, and as generally described above with respect to FIGS. **1**A-B, the anchor assembly **20** can include first and second anchors **22***a* and **22***b*. The first anchor **22***a* includes a first anchor body **28***a* that extends substantially along the direction of elongation **34** and defines a first plurality of openings **40***a* that extend through the first anchor body **28***a*. The first anchor **22***a* further includes a first actuation strand **38***a* that extends through at least one of the openings **40***a*, such as a plurality of the openings, and is configured to receive an actuation force F that causes the first anchor body **28***a* to actuate from the first configuration to the expanded configuration in the manner described above. The first actuation strand **38***a* can be separate from and attached to, for instance woven through openings of, the first anchor body **28***a*, or can be integral with the first anchor body **28***a* and extend through openings of the first anchor body **28***a*.

The second anchor **22***b* includes a second anchor body **28***b* that extends substantially along the direction of elongation **34** and defines a second plurality of openings **40***b* that extend through the second anchor body **28***b*. The second anchor **22***b* further includes a second actuation strand **38***b* that extends through at least one of the openings **40***b*, such as a plurality of the openings, and is configured to receive an actuation force F that causes the second anchor body **28***b* to actuate from the first configuration to the expanded configuration in the manner described above. The second actuation strand **38***b* can be separate from and attached to, for instance woven through openings of, the second anchor body **28***b*, or can be integral with the second anchor body **28***b* and extend through openings of the second anchor body **28***b*.

In accordance with the embodiment illustrated in FIGS. **2**A-B, the first and second actuation strands **38***a* and **38***b* are integral with the respective first and second anchor bodies **28***a* and **28***b*. In accordance with other embodiments, the first and second actuation strands **38***a* and **38***b* are illustrated as separate from and attached to the respective first and second anchor bodies **28***a* and **28***b*. In accordance with still other embodiments, one of the first and second actuation strands **38***a* and **38***b* is integral with the respective anchor body and the other of the first and second actuation strands **38***a* and **38***b* is separate from and attached to the respective anchor body. In accordance with embodiments whereby the first and second actuation strands **38***a* and **38***b* are illustrated and described as integral with the respective first and second anchor bodies **28***a* and **28***b*, it should be appreciated that the first and second actuation strands **38***a* and **38***b* can alternatively be separate from and attached to the respective first and second anchor bodies **28***a* and **28***b*, unless otherwise indicated. Furthermore, in accordance with embodiments whereby the first and second actuation strands **38***a* and **38***b* are illustrated and described as separate from and attached to the respective first and second anchor bodies **28***a* and **28***b*, it should be appreciated that the first and second actuation strands **38***a* and **38***b* can alternatively be integral with the respective first and second anchor bodies **28***a* and **28***b*, unless otherwise indicated.

With continuing reference to FIG. **2**C, the anchor assembly **20** can include at least one connector member **63** that is configured to join the anchors **22** and allow a biasing force to be applied to at least one of the anchors **22***a* and **22***b* that draws the anchors **22***a* and **22***b* together, thereby approximating the anatomical defect **24**. The connector member **63** can be integral with one or both of the first and second anchors **22***a* and **22***b*, for instance integral with one or both of the first and second actuation strands **38***a* and **38***b*, can be integral with one or both of the first and second anchor bodies, or can be separate from and attached (directly or indirectly) to one or both of the first and second anchors **22***a* and **22***b*. For instance, the connector member **63** can be separate from and attached between the first and second anchors **22***a* and **22***b*, as will be described in more detail below. While connector members **63** are described herein in accordance with various embodiments, it should be appreciated that the anchor assembly **20** can alternatively include any suitable connector member configured to attach the first anchor **22***a* to the second anchor **22***b*. At least one or both of the actuation strands **38***a-b* can be configured to receive an approximation force AF that biases at least one of the first and second anchors **22***a* and **22***b* toward the other so as to approximate the gap **24***c*.

The anchor assembly **20** can include a connector member **63** that is integral with the corresponding actuation strands **38***a* and **38***b*. As described above, each of the first and second anchor bodies **28***a* and **28***b* can be implanted at respective first and target anatomical locations **24***a* and **24***b* that are disposed on opposite sides of a gap **24***c* as illustrated in FIG. **2**A. Each of the first and second actuation strands **38***a* and **38***b* can receive an actuation force F substantially along the direction of elongation **34** that causes the respective first and second anchor bodies **28***a* and **28***b*, and in particular the respective expandable portions **36***a* and **36***b*, to actuate from the first configuration to the expanded configuration so as to fix the first and second anchor bodies **28***a* and **28***b* at the respective first and second target anatomical locations **24***a* and **24***b*. The actuation force F applied to each of the actuation strands **38***a* and **38***b* can be in the form of different actuation forces, or, as is described in more detail below, can be the same actuation force.

Referring now to FIG. **2**B, once the first and second anchor bodies **28***a* and **28***b* are secured to the respective first and second target anatomical locations **24***a* and **24***b*, an approximation force AF can be applied to at least one or both of the first and second actuation segments **38***a* and **38***b* substantially along a direction toward the other of the respective first and second anchor bodies **28***a* and **28***b*, which can also be toward the respective gap **24***c*. Thus the approximation force AF can have a directional component that is toward the other of the respective first and second anchor bodies **28***a* and **28***b*, for instance can be directed purely toward the other of the first and second anchor bodies **28***a* and **28***b*. Likewise, the approximation force AF can have a directional component that is directed toward the gap **24***c*, for instance directed purely toward the gap **24***c*. Accordingly, the approximation force AF biases at least one or both of the anchor bodies **28***a* and **28***b* toward the other of the anchor bodies **28***a* and **28***b* to respective biased positions that to approximate the gap **24***c*.

Referring again to FIG. **2**C, the connector member **63** that can define at least one or both of a sliding member **47** and a locking member **64** that attaches the first and second connector actuation strands **38***a* and **38***b* together, for instance at a junction **125**. Thus, it should be appreciated that the at least one of the sliding member **47** and locking member **64** can likewise attach the first actuation strand **38***a* to the second actuation strand **38***b*. In accordance with one embodiment, the connector member **63** can attach the first and second actuation strands **38***a* and **38***b* after the first and second actuation strands **38***a* and **38***b* have been put under tension so as to maintain the gap **24***c* in an approximated state. The member **63** can be actuated to the locked configuration so as to prevent or resist separation of the first and second anchors **22***a* and **22***b* that would cause the gap **24***c* to open from the approximated state. Alternatively or additionally, the connector member **63** can attach the first and second actuation strands **38***a* and **38***b* to each other prior to applying the approximation force AF to the actuation strands **38***a* and **38***b*, and placing the actuation strands **38***a* and **38***b* under tension, and therefore prior to approximating the gap **24***c*.

In accordance with certain embodiments, the connector member **63** is defined by, and integral with, the first and second actuation strands **38***a* and **38***b*, and can be configured as a sliding and locking knot that can iterate from an unlocked configuration, whereby one of the actuation strands **38***a* and **38***b* to slide relative to the other so as to approximate the gap **24***c*, and a locked configuration, whereby the actuation strands **38***a* and **38***b* are prevented from sliding relative to each other through the knot. The connector member **63** defines the at least one of the sliding member **47** and the locking member **64** at the junction **125**. Thus, it can be said that the connector member **63** can directly or indirectly attach the first and second actuation strands **38***a* and **38***b* together.

Referring now to FIG. **3**A, a fixation assembly **250** can include the anchor assembly **20**, such as at least one anchor **22**, and an insertion instrument **252** configured to inject the anchor **22** in the anatomical structure **24** as illustrated in FIGS. **1**A-B. It should be appreciated that the fixation kit **250** can include at least one or more up to all of the anchors **22** described herein alone, attached to each other, or configured to be attached to each other in accordance with any of the embodiments describer herein. The insertion instrument **252** can include a cannula **254** with a central opening **256** and a first pusher member such as a plunger or push rod **258** which is coaxially insertable into the central opening **256**. the cannula **254** has an acuminated tip **260** and a slot **268** extending axially from the tip **260**. The cannula **254** can extends substantially straight as illustrated, or can be curved or define any suitable shape as desired so as to eject an anchor body **28**.

Further, the insertion instrument **252** comprises a handle **262** with an operating lever **264**. One end of the handle **262** is detachably attached to the cannula **254** and the operating lever **264** is detachably attached to the plunger **258**. The outer diameter of the plunger **258** corresponds to the inner diameter of the central opening **256** of the cannula **254**. At the rear end the central opening of the cannula **254** is conically configured in such a manner that it enlarges towards the rear end of the cannula **254** at an inlet **266**. Thus, the anchor body **28** of the anchor **22** can be inserted in its first configuration through the conical inlet **266** and into the central opening **256** of the cannula **254**, such that the anchor body **28** can be compressed.

When the anchor body **28** is pressed out of the cannula **254** by pressing the plunger **258** forward the anchor body **28** can radially expand, for instance in the second direction **35** (see FIGS. **1**A-B) in such a manner that it can be retained by the front face of the cannula **254** when a tensile force is exerted onto the actuation strand **38** in order to tighten the anchor body **28**. the actuation strand **38** is led through the slot **268** so that it can be led alongside the cannula **254** when the cannula **254** is inserted into the anatomical structure **24**. At the free end of the actuation strand **38** a needle **270** is attached that can be used for finishing a surgical procedure when the anchor body **28** of the anchor **22** has been actuated to the expanded configuration and secured to the anatomical structure **24**.

Referring to FIG. **3**B, the plunger **258** can have an outer diameter or alternative cross-sectional dimension that is less than the inner diameter or cross-sectional dimension of the central opening **256** of the cannula **254**. The actuation strand **38** of the anchor **22** can thus be led through the central opening **256** of the cannula **254** when the plunger **258** is inserted in the central opening **256** of the cannula **254**. By actuating the operating lever **264** at the handle **262**, the plunger **258** can push the anchor **22** forward in the cannula **254** as far as the anchor body **28** exits from the central opening **256** at the tip **260** of the cannula **254**. Once the anchor body **28** is positioned in the central opening **256** the actuation strand **38** can be pulled backward at the rear end of the cannula **254** so that the anchor body **28** can be actuated in the cavity **256** to its expanded configuration.

Referring to FIGS. **4**A-D, the plunger **258** can define a central bore **272** where the actuation strand **38** of the anchor **22** can be led through. Further, the cannula **254** has a first longitudinal aperture **274** extending between the tip **260** and the rear end of the cannula **254** so that the cannula **254** is slotted over its entire length. A second longitudinal aperture **276** extends on the plunger **258** between the front end and the rear end of the plunger **258** so that the plunger **258** is slotted over its entire length as well. As shown in FIG. **4**B when the cannula **254** is in a first rotative position relative to the plunger **258** the first longitudinal aperture **274** of the cannula **254** is diametrically opposite to the second longitudinal aperture **276** of the plunger **258**. In the first rotative position of the cannula **254** the actuation strand **38** of the anchor **22** is retained by the central bore **272**. Once the anchor body **28** of the anchor **22** has been fixed in a cavity of a patient's body by pulling the actuation strand **38** of the anchor **22** backward the cannula **254** can be rotated into a second rotative position relative to the plunger **258** (FIG. **4**D). In this second rotative position of the cannula **254** the first longitudinal aperture **274** of the cannula **254** is aligned with the second longitudinal aperture **276** of the plunger **258** and the insertion instrument **252** can be released from the actuation strand **38** of the anchor **22**.

FIGS. **5**A-D illustrate the handle **262** and the attachment of the cannula **254** to the handle **262** of an embodiment of the insertion instrument **252** of FIGS. **3**A to **4**D. The upper end portion of the handle **262** comprises a groove **278** into which the cannula **254** can be inserted and a spring member such as a leaf spring **279** so as to provide a releasable snap lock configured to releasably attach the cannula **254** to the handle **262**. The rear end of the plunger **258** can be snapped into a resilient fork **280** arranged at the upper end of the operating lever **264**.

Referring to FIG. **6**, the insertion instrument **52** can include a depth control tube **282** slid over the cannula **254** and a clamping element **284**. The insertion instrument **52** is pre-operatively prepared by inserting the anchor **22** into the cannula **254** and inserting the plunger **258**. Once the anchor **22** and the plunger **258** have been inserted any one of a plurality of clamping elements **284** is attached to the rear end of the insertion instrument **252** by snapping a first tab **286** onto the rear portion of the cannula **254**. To prevent an unintended displacement of the plunger **258** relative to the cannula **254** the clamping element **284** comprises a second tab **288** which abuts the rear end of the cannula **254** and a third tab **290** which abuts an enlarged portion at the rear end of the plunger **258**. Before using the insertion instrument **252**, the clamping element **284** is removed from the cannula **254** and the handle **262** is attached to the cannula **254**, and the insertion instrument **252** can be operated in the manner described herein.

Referring now to FIGS. **1**A and **7**A-D, an insertion instrument **300** constructed in accordance with an alternative embodiment is configured to deliver at least one anchor knot, such as the first and second anchor knots **22***a* and **22***b*, to a respective target location, such as target locations **24***a* and **24***b* (FIG. **1**A). The insertion instrument **300** is illustrated as elongate along a longitudinal axis **302** that extends substantially along a longitudinal direction L, and defines a proximal end **304** and an opposed distal end **306** that is spaced from the proximal end **304** along the longitudinal axis **302**. Thus, it should be appreciated that the terms "distal" and "proximal" and derivatives thereof refer to a spatial orientation closer to the distal end **306** and the proximal end **304**, respectively. Furthermore, the directional term "downstream" and "upstream" and derivatives thereof refer to a direction that extends from the proximal end **304** toward the distal end **306**, and a direction that extends from the distal end **306** toward the proximal end **304**, respectively. The insertion instrument **300** further extends along a lateral direction A that is substantially perpendicular to the longitudinal direction L, and a transverse direction T that is substantially perpendicular to the longitudinal direction L and the lateral direction A. It can also be said that the lateral and transverse directions A and T extend radially with respect to the longitudinal axis **302**. Thus, the terms "radially outward" and "radially inward" and derivatives thereof refer to a direction away from and toward the longitudinal axis **302**, respectively, and can be used synonymously with laterally and transversely as desired.

The insertion instrument **300** includes a casing **308** that can provide a handle, and a cannula **310** that is supported by the casing **308** and extends distally out from the casing **308** along a central axis **309**. The cannula **310** can be fixed to the casing **308** with respect to translation. The central axis **309** can extend longitudinally and can thus be inline with the longitudinal axis **302** of the insertion instrument **300**, or can be offset with respect to the longitudinal axis **302** of the insertion instrument **300**. The cannula **310** extends substantially straight as illustrated, but can alternatively be curved or define any suitable alternative shape as desired. The cannula **310** defines an elongate opening **312**, which can be elongate longitudinally or along any other direction or combination of directions as desired, that is sized to receive the at least one anchor knot, such as the first and second anchor knots **22***a* and **22***b*. The insertion instrument **300** can further include a biasing member such as a plug **314** that is disposed in the elongate opening **312**, such that the first knot anchor body **28***a* is disposed in the cannula **310** at a location upstream of the plug **314**, and the second knot anchor **28***b* is disposed in the cannula **310** at a location downstream of the plug **314**. Thus, the plug **314** can further provide a divider that separates the first anchor body **28***a* from the second anchor body **28***b* along the longitudinal direction. The first and second anchor bodies **28***a* and **28***b* are stacked in the instrument **300** along the longitudinal axis **302**. The cannula **310** defines a distal tip **311** that is configured to pierce tissue at a target location so as to deliver at least one anchor to the target location.

The insertion instrument **300** further includes a plunger **316** that is supported by the casing **308**, and extends proximally out from the casing **308**. The plunger **316** is configured to translate distally from an initial or first position illustrated in FIGS. **7**A-D along a first stroke to a second position illustrated in FIGS. **8**A-D, thereby causing the plug **314** to bias the second anchor **22***b* distally so as to eject the second anchor **22***b* out the cannula **310**, for instance out a distal ejection port **442** that extends substantially longitudinally through the tip **311**.

Once the second anchor **22***b* has been ejected out the ejection port **442**, the plunger **316** is configured to translate further distally along a first portion of a second stroke illustrated in FIGS. **11**A-C, and along a second portion of the second stroke illustrated in FIGS. **12**A-C, such that a push rod **330** (see FIG. **7**C) biases the first anchor body **28***a* distally so as to eject the first anchor **22***a* out the cannula **310**, for instance out the ejection port **442**, into the first target anatomical location **22***a*. Alternatively, as described in more detail below, the cannula **310** can define a side ejection port **318** (described below with reference to FIG. **31**) that is configured to eject the first and second anchor bodies **28***a* and **28***b* out the cannula **310** along a direction angularly offset with respect to the central axis **309**.

The insertion instrument **300** can be configured such that the plunger **316** moves distally from the second position to an offset position as illustrated in FIGS. **9**A-D before moving along an intermediate stroke from the offset position to an intermediate position as illustrated in FIGS. **10**A-D. Accordingly, the plunger **316** can move from the second position, to the offset position, to the intermediate position, and finally to the third position illustrated in FIGS. **12**A-D. In accordance with the illustrated embodiment, the plunger **316** is rotated from the second position to the intermediate position prior to translating along the second stroke to the third position. For instance, the plunger **316** can move along a first portion of the second stroke as illustrated in FIGS. **11**A-D prior to moving along a second portion of the second stroke as illustrated in FIGS. **12**A-D. An actuation force can be applied to the actuation portion **131***a* and **131***b* of the first and second anchors **22***a* and **22***b*, respectively, after each anchor has been ejected, or can alternatively be applied after both anchors **22***a* and **22***b* have been ejected. The anchors **22***a* and **22***b* can be attached to each other in any manner as desired, for instance across the gap **24***c*.

Referring now to FIGS. **7**A-C in particular, the casing **308** defines a body **320** that defines at least one radially outer side wall **322**, such as a plurality of joined walls that can be of any size and shape, and further defines a proximal wall **324** and an opposed distal wall **326**. The at least one outer wall **322**, the proximal wall **324**, and the distal wall **326** at least partially define an interior **328** that can be in fluid communication with the elongate opening **312** of the cannula **310**. The cannula **310** is attached to the distal wall **326** of the casing **308** and is thus fixed to the casing **308**. The cannula **310** extends distally from the casing **308** to the tip **311**. The tip **311** can be tapered distally, such that the cannula **310** defines a tapered distal end. For instance, the tip **311** can be conical, that is the tip **311** can define a portion that is conical, and can define the shape of a cone or any suitable alternative shape as desired. The insertion instrument **300** can further include a support sleeve **313** that at least partially surrounds the cannula **310** at the interface with the casing **308**, and extends distally along a portion of the length of the cannula **310**. The support sleeve **313** provides structural support and rigidity to the cannula **310**.

The plunger **316** defines a distal end **316***a* that is disposed in the interior **328**, a body portion **316***b* that extends proximally from the distal end **316***a* and out the proximal wall **324** of the casing **308**, and a proximal end **316***c* that can define a grip that is disposed outside the casing **308**. The insertion instrument **300** further includes a first pusher assembly **317** that can include the plunger **316** and a first pusher member, such as a push rod **330** that is attached, directly or indirectly, to the distal end **316***a* of the plunger **316**. The push rod **330** can be attached to the plunger **316** (for instance integral with the plunger **316** or separately attached to the plunger **316** via any suitable fastener or intermediate apparatus as desired). For instance, in accordance with the illustrated embodiment, the distal end **316***a* of the plunger is attached to a retention housing **392** as is described in more detail below with reference to FIG. **17**. The push rod **330** is attached to the retention housing **392**, and is thus attached to the plunger **316**. The push rod **330** can extend distally from the plunger **316** into the opening **312** of the cannula **310** and out the distal wall **326** of the casing **308**. It should be appreciated that reference to at least one or both of the plunger **316** and the push rod **330** can be applicable to the first pusher assembly **317**. For instance, description with respect to the structure that is fixed or coupled to at least one or both of the plunger **316** and the push rod **330** can be said to be fixed or coupled, respectively, to the first pusher assembly **317**.

Because the push rod **330** is translatably fixed to the plunger **316**, movement of the plunger **316** proximally and distally causes the push rod **330** to likewise move proximally and distally. The push rod **330** defines a distal end **330***a* disposed in the opening **312** of the cannula **310**. Accordingly, the distal end **330***a* of the push rod **330** is configured to brace against the first anchor **22***a* when the insertion instrument **300** is in the first position as illustrated in FIGS. **7**A-D. The distal end **330***a* of the push rod **330** is configured to brace against the first anchor **22***a* when the insertion instrument **300** is in the first position, and also as the plunger **316**, and thus the push rod **330**, translates distally from the first position to the second position, such that the push rod **330** ejects the first anchor **22***a* out the insertion instrument **300** and into the respective target location **24***a*. When a tensile force is applied to the respective actuation member **37***a* substantially along the direction of elongation of the anchor body **28***a* after the first anchor body **28***a* has been ejected and is braced against the anatomical structure **24**, the anchor body **28***a* expands along the second direction **35** that is perpendicular with respect to the direction of elongation **34** of the anchor body **28***a* (see, for instance, FIGS. **1**A-B).

The insertion instrument **300** can further includes a second pusher assembly **333** that includes an attachment member **331**, such as a collar **332** that extends about the plunger **316** and can at least partially surround the plunger **316**, and a second pusher member, such as a push tube **334** that extends distally from the collar **332** and at least partially surrounds the push rod **330**. The push tube **334** can be attached to the collar **332** (for instance integral with the collar **332** or separately attached to the collar **332** via any suitable fastener as desired). Accordingly, description of at least one or both of the push tube and the collar **332** can be applicable to the second pusher assembly **333**. For instance, description with respect to the structure that is fixed or coupled to at least one or both of the push tube **334** and the collar **332** can be said to be fixed or coupled, respectively, to the second pusher assembly **333**.

The push tube **334** can include the plug **314** that can define the distal end of the push tube **334**. The push tube **334** can be cannulated in accordance with the illustrated embodiment so as to define a longitudinally elongate opening **335**, and the push rod **330** has an outer diameter that is less than that of the opening **335**, such that the push rod **330** is disposed inside the elongate opening **335** of the push tube **334**. It should be appreciated that structures described herein as defining a diameter can alternatively define any suitably configured cross section, which can be circular or alternatively shaped, and thus can define any cross-sectional dimension which can be a diameter or not. The cannula **310** can contain both the first and second anchor bodies **28***a* and **28***b*. For instance, the push tube **334** can contain the first anchor body **28***a* at a location upstream of the plug **314**, and the cannula **310** can contain the second anchor body **28***b* at a location distal to the plug **314**, and thus distal to the first anchor body **28***a*.

The insertion instrument **300** can include a force transfer member **336** that can extend radially inward from the distal end of the collar **332**, such that the push rod **330** extends distally through or from force transfer member **336**. The force transfer member **336** can abut the collar **332**, or can be fixed to the distal end of the collar **332**. The force transfer member **336** can further abut or be fixed to the proximal end of the push tube **334**. If the force transfer member **336** abuts one or both of the collar **332** and the push tube **334**, then 1) distal movement of the collar **332** biases the force transfer member **336** distally, which in turn biases the push tube **334**, including the plug **314**, distally, and 2) proximal movement of the collar **332** does not bias the push tube **334** proximally. If the force transfer member **336** is attached to the collar **332** and the push tube **334**, then 1) distal movement of the collar **332** biases the force transfer member **336** distally, which in turn biases the push tube **334**, including the plug **314**, distally, and 2) proximal movement of the collar **332** biases the force transfer member **336** distally, which in turn biases the push tube **334**, including the plug **314**, distally. Whether the force transfer member **336** abuts or is fixed to the collar **332** and the push tube **334**, it can be said that the collar **332** is translatably coupled to the push tube **334**, such that distal translation of the collar **332** causes the push tube **334** to translate distally.

The collar **332**, and thus the push tube **334**, including the plug **314**, is configured to be selectively coupled to and decoupled from the first pusher assembly **317** with respect to translation, and configured to be selectively coupled to and decoupled from the casing **308** with respect to translation. For instance, in a first configuration, the collar **332** is translatably fixed to the plunger **316**, and thus also to the push rod **330**. Furthermore, in the first configuration, the collar **332** is translatably decoupled from the casing **308** and thus also translatably decoupled from the cannula **310**. Accordingly, in the first configuration, proximal and distal movement of the plunger **316** and push rod **330** relative to the casing **308** and cannula **310** causes the collar **332** to correspondingly move proximally and distally relative to the casing **308** and cannula **310**. It should be appreciated that in the first configuration, the push rod **330** is translatably coupled to the push tube **334**, such that the push rod **330** and the push tube **334** translate in tandem, for instance during the first stroke, thereby causing the push tube **334** to eject the second anchor body **28***b* out the cannula **310**, as will be described in more detail below. As described above, when a tensile force is applied to the respective actuation member **37***b* substantially along the direction of elongation of the second anchor body **28***b* after the second anchor body **28***b* has been ejected, the second anchor body **28***b* expands along the second direction **35** that is perpendicular with respect to the direction of elongation **34** of the anchor body **28***b* (see, for instance, FIGS. **1**A-B).

In a second configuration, the collar **332** is translatably decoupled from the plunger **316**, and thus the push rod **330**, and is translatably coupled to the casing **308**, and thus the cannula **310**. Accordingly, in the second configuration, the plunger **316** and push rod **330** move proximally and distally relative to the collar **332** and the casing **308** and the cannula **310**. It should be appreciated that in the second configuration, after the first stroke, the push rod **330** is translatably decoupled from the push tube **334**, such that the push rod **330** translates distally relative to the push tube **334** and thus the plug **314**, for instance during at least a portion of the second stroke, thereby causing the push rod **330** to eject the first anchor body **28***a* out the cannula **310**, as will be described in more detail below.

Referring now to FIGS. **13**A-G, the insertion instrument **300** includes a guide system **329** that operably couples the casing **308** and the push tube **334** so as to guide relative movement between the casing **308** and the push rod **330**. In accordance with the illustrated embodiment, the guide system **329** includes complementary first and second guide members **338** and **340**, respectively, that are coupled between the casing **308** and the collar **332**. In accordance with the illustrated embodiment, during the first stroke and a first portion of the second stroke, the first and second guide members **338** and **340** cooperate to guide the movement of the plunger **316** (and push rod **330**) and collar **332** (and push tube **334**) in tandem relative to the casing **308**. In that regard, it should be appreciated that the first and second guide members **338** and **340** are operably coupled between the plunger **316** and the collar **332** during the first stroke and a first portion of the second stroke. In accordance with the illustrated embodiment, during a second portion of the second stroke, the first and second guide members **338** and **340** cooperate to guide the movement of the plunger **316** and push rod **330** relative to both the collar **332** (and push tube **334**) and the casing **308**. In that regard, it should be appreciated that the first and second guide members **338** and **340** are operably coupled between the casing **308** and the collar **332** during the second portion of the second stroke.

In accordance with the illustrated embodiment, one of the first and second guide members **338** and **340** is provided as a guide track **342** that extends into one of the collar **332** and the casing **308**, and the other of the guide members **338** and **340** is provided as a guide pin **344** that extends into the guide track **342**, such that the guide pin **344** rides in the guide track **342**, thereby operably coupling the collar **332** to the casing **308**. In accordance with the illustrated embodiment, the first guide member **338** is provided as the guide track **342** that is carried, and defined, by the collar **332**, and the second guide member **340** is provided as the guide pin **344** that is translatably fixed to the casing **308** and extends into the guide track **342**. For instance, the guide pin **344** extends radially into or through the side wall **322** of the casing **308** and into the guide track **342**. It should be appreciated in accordance with an alternative embodiment that the guide track **342** can be carried, and defined, by the casing **308** and the guide pin **344** can be translatably fixed to the collar **332**.

In accordance with the embodiment illustrated in FIG. **13**G, the track **342** defines a slot **339** that extends radially into the collar **332** but not through the collar **332**, and a base **341** of the collar **332** that is located at the radially inner end of the slot **339**. The guide track **342** defines a first guide portion such as a first track portion **342***a*, a second guide portion such as a second track portion **342***b* that is offset, for instance radially, with respect to the first track portion **342***a*, and an angled intermediate guide portion such as an angled intermediate track portion **342***c* that connects the first track portion **342***a* to the second track portion **342***a*. Accordingly, the guide pin **344** is configured to travel along the first track portion **342***a* during the first stroke as the plunger **316** is translated from the first position to the second position. In particular, the second track portion **342***a* defines a first or distal end **342***a*' an opposed second or proximal end **342***a*", and an offset position **342***a*''' between the distal end **342***a* and the proximal end **342***a*". The offset position **342***a*''' is aligned with an intermediate track portion **342***c* that extends between the first track portion **342***a* and the second track portion **342***b*. Once the guide pin **344** has translated from the proximal end **342***a*" to the offset position **342***a*''', the guide pin **344** can travel along the intermediate track portion **342***c* toward the second track portion **342***b* as the plunger **316** is rotated to the intermediate position. The guide pin **344** can subsequently travel distally along the second track portion **342***b* as the plunger **316** is further translated toward the third position.

The first and second guide track portions **342***a* and **342***b* extend substantially longitudinally, such that distal translation of the collar **332** relative to the casing **308** during the first stroke causes the guide pin **344** and the guide track **342** to translate relative to each other. In accordance with the illustrated embodiment as shown in FIGS. **13**A-B, the guide track **342** translates distally with respect to the guide pin **344**, thereby causing the guide pin **344** to translate proximally along the first guide track portion **342***a* during the first stroke of the plunger **316** and the collar **332**. Once the first stroke is completed, and the second anchor body **28***b* has been ejected from the cannula **310**, the guide pin **344** is disposed at the proximal end **342***a*" of the first track portion **342***a*. The collar **332** defines a stop member at the proximal end of the first track portion **342***a*. Thus, the guide pin **344** interferes with the collar **332**, thereby preventing the plunger **316** and collar **332** from further translating distally relative to the casing **308**. Accordingly, the user is prevented from inadvertently ejecting the first anchor body **308***a* by continued distal translation of the plunger **316** after the second anchor body **28***b* has been ejected.

It should be appreciated during the first stroke that the guide pin **344** translates from the distal position **342***a*' (illustrated in FIG. **13**A), past the offset position **342***a*''' (illustrated in FIG. **13**C), to the proximal end **342***a*" (illustrated in FIG. **13**B). When the guide pin **344** is at the offset position **342***a*''', the push tube **344** is slightly recessed proximally with respect to the distal ejection port **442** (see FIG. **9**D). As the guide pin **344** moves to the proximal end **342***a*", the push tube **344** translates distally with respect to the ejection port **442** (see FIG. **8**D). As further illustrated in FIGS. **8**A and **9**A, the insertion instrument **300** includes a spring member **365**, which can be a coil spring, that extends between a spring seat **381** that is secured to the casing **308**, for instance at the distal wall **326** of the casing **308**, and the force transfer member **336**. Thus, the spring member **365** is operably coupled between the casing **308** and the second pusher assembly **333**. When the second pusher assembly **333** is coupled to the first pusher assembly **317** with respect to translation, the spring member **365** is operably coupled between the casing **308** and the first pusher assembly **317**.

The spring member **365** provides a force that biases the collar **332**, and thus the plunger **316**, proximally as the plunger **316** translates distally along the first stroke. Accordingly, referring to FIGS. **13**B-C, once the guide pin **344** is in the second position at the proximal end **342***a*" of the first track portion **342***a*, the spring force biases the collar **332** to move such that the guide pin **344** translates distally from the proximal end **342***a*" of the first track portion **342***a* toward the distal end **342***a*' of the first track portion **342***a*. However, as is described in more detail below, the track **342** includes a base **341** that interferes with movement of the guide pin **344** along a distal direction from the offset position **342***a*'''. When the guide pin **344** is in the offset position **342***a*''', the plug **314** of the push tube **334** is recessed proximally with respect to, or substantially aligned with, the distal ejection port **442** (see FIG. **9**D) such that the plug **314** does not extend distally beyond the distal ejection port **442**.

Referring now to FIGS. **13**C-D, the plunger **316** can be rotated along the direction of Arrow A as it travels along the intermediate stroke. The insertion instrument **300** defines a key **318** that rotatably couples the plunger **316** and the collar **332**. In accordance with the illustrated embodiment, the key **318** is provided as complementary flat surfaces of the plunger **316** and the collar **332** that prevents defines the plunger **316** from rotating with respect to the collar **332**. As a result, rotation of the plunger **316** along the direction of Arrow A causes the collar **332** to likewise rotate along the direction of Arrow A. Accordingly, upon completion of the first stroke, rotation of the plunger **316** causes the guide pin **344** to travel along the intermediate stroke from the first track portion **342***a*, along intermediate track portion **342***c*, and to the distal end of the second track portion **342***b*. Referring now to FIGS. **13**D-E, once the guide pin **344** is disposed in the second track portion **342***b*, further translation of the plunger **316** and the collar **332** along a first portion of the second stroke causes the guide pin **344** to translate distally relative to the casing **308** until the guide pin **344** has traveled to the proximal end of the second track portion **342***b*. The collar **332** defines a stop member at the proximal end of the second track portion **342***b* that prevents the collar **332** from continuing to move distally with respect to the casing **308**. It can be said that the collar **332** defines a stop member at the terminal ends of the first and second track portions **342***a* and **342***b*.

Referring now to FIGS. **13**E-F, and as is described in more detail below, once the guide pin **344** has traveled to the proximal end of the second track portion **342***b*, further distal translation of the plunger **316** along a second portion of the second stroke is decoupled from the collar **332**, such that the plunger **316** and push rod **330** translate relative to the collar **332**, the push tube **334**, and the casing **308**. The plunger **316** is configured to translate distally relative to the collar **332** and casing **308** during the second portion of the second stroke until the distal end **316***c* of the plunger abuts the casing **308**, for instance at the proximal wall **324**, thereby completing the second stroke and ejecting the second anchor body **28***b* out the cannula, as illustrated in FIGS. **12**A-C.

Referring now to FIG. **13**G in particular, the base **341** of the track **342** defines a first base portion **341***a* at the first track portion **342***a*, a second base portion **341***b* at the second track portion **342***b*, and an intermediate base portion **341***c* at the intermediate track portion **342***c*. The base **341** has portions that are deeper than others such that as the guide pin **344** rides along the track, at least one or both of audible and tactile feedback can be detected by the user to indicate that the collar **332**, and in some instances the plunger **316**, have completed a stroke or a portion of a stroke. The base **341** can further provide a stop that prevents the guide pin **344** from moving proximally along portions of the track **342**. For instance, the first base portion **341***a* defines a first or distal first base portion **341***a*' and a second or proximal first base portion **341***a*" that is deeper than the distal first base portion **341***a*'. The first base portion **341***a* defines an edge **346***a* that is disposed between the proximal first base portion **341***a*' and the distal first base portion **341***a*". The edge **346***a* can extend radially, or along a direction having a radial component that extends toward the longitudinal axis **302**.

The guide pin **344** can define a post **344***a* and a spring member **345** that is connected between the casing **308** and the post **344***a*, and biases the post **344***a* into the track **342** and against the base **341**. Thus, as the guide pin **344** moves proximally relative to the first track portion **342***a* when the collar **332** and the plunger **316** move along the first stroke, the distal portion **344***b* of the guide pin **344** moves along the distal first base portion **341***a*' and over the edge **346***a* as the guide pin **344** travels to the distal first base portion **341***a*". As the guide pin **344** travels over the edge **346***a* and is biased against the track **341** by a spring force of the spring member **345**, at least one of a tactile and an audible feedback can be communicated to the user that the plunger **316** and the collar **332** have completed the first stroke. The edge **346***a* can be disposed at the offset position **342***a*''' of the first track portion, such that once the guide pin **344** has traveled along the first base portion **341***a* to the proximal end **342***a*" of the first track portion **342***a*, the edge **346***a* prevents the force of the spring member **365** from causing the guide pin **344** to translate proximal with respect to the offset position **342***a*''' of the first track portion **342***a*. Rather, because the guide pin **344** abuts the edge **346***a*, the biasing force of the spring member **365** brings the guide pin **344** into alignment with the intermediate track portion **342***c*, and in position to be moved or rotated along the intermediate stroke.

With continuing reference to FIG. **13**G, the intermediate base portion **341***c* defines a first or proximal intermediate base portion **341***c*' and a second or distal intermediate base portion **341***c*" that is deeper than the proximal intermediate base portion **341***c*'. The distal intermediate base portion **341***c*" can be aligned with the second base portion **341***b*. The intermediate base portion **341***c* defines an edge **346***c* that is disposed between the proximal intermediate base portion **341***a*' and the distal intermediate base portion **341***a*". Alternatively, the intermediate base portion **341***c* can be devoid of the distal portion, such that the edge **346***c* is disposed between the intermediate base portion **341***c* and the second base portion **341***b*. The edge **346***c* can extend radially, or along a direction having a radial component that extends toward the longitudinal axis **302**. As the distal portion **344***b* of the guide pin **344** travels over the edge **346***c* during a transition between the intermediate stroke and the second stroke, and is aligned with the second track portion **342***b*, at least one of a tactile and an audible feedback can be communicated to the user that the plunger **316** and the collar **332** have completed the intermediate stroke, and are in position to be moved along the first portion of the second stroke. Furthermore, the edge **346***c* prevents the plunger **316** from being rotated along a direction opposite the direction of Arrow A (FIG. **13**C) once the guide pin **344** is positioned in the second track portion **342***b*.

The second base portion **341***b* defines a first or proximal second base portion **341***b*' and a second or distal second base portion **341***b*" that is deeper than the proximal second base portion **341***b*'. The distal second base portion **341***b*" can be disposed at the terminal distal end of the second track portion **342***b*. The second base portion **341***b* defines an edge **346***b* that is disposed between the proximal second base portion **341***b*' and the distal second base portion **341***b*". The edge **346***b* can extend radially, or along a direction having a radial component that extends toward the longitudinal axis **302**. As the distal portion **344***b* of the guide pin **344** travels over the edge **346***b*, at least one of a tactile and an audible feedback can be communicated to the user that the plunger **316** and the collar **332** have completed the first portion of the second stroke. The feedback can indicate that the plunger **316** is decoupled from the collar **332**, and can translate along the second portion of the second stroke independent of the collar **332**, as will now be described. Furthermore, the edge **346***b* prevents the guide pin **344** from moving proximally along the second track portion **342***b* once the plunger **316** and the collar **332** have been decoupled.

Referring now to FIG. **7**C and FIGS. **14**A-D, the insertion instrument **300** includes a coupling assembly **350** that is configured to iterate between a first mode of operation and a second mode of operation. In the first mode of operation, the coupling assembly **350** translatably fixes the first pusher member, illustrated as the push rod **330**, and the second pusher member, illustrated as the push tube **334** with respect to translation during the first stroke. In the first mode of operation, the coupling assembly **350** releasably translatably fixes the push rod **330** to the push tube **334**, such that in a second mode of operation, the coupling assembly **350** decouples the push rod **330** from the push tube **334** such that the push rod **330** can translate distally relative to the push tube **334** after the first stroke, for instance during the second stroke. Furthermore, in the second mode of operation, the coupling assembly **350** can translatably fix the push tube **334** to the casing **308**, such that a distal translation force applied to the plunger **316** causes the plunger **316**, and thus the push rod **330**, to translate distally relative to the push tube **334**, and thus the collar **332**. In accordance with the illustrated embodiment, the coupling assembly **350** is in the first mode of operation during the first stroke of the first pusher assembly **317**, the intermediate stroke of the first pusher assembly **317**, and the first portion of the second stroke of the first pusher assembly **317**. In accordance with the illustrated embodiment, the coupling assembly **350** transitions to the second mode of operation, as the first pusher assembly **317** transitions between the first portion of the second stroke and the second portion of the second stroke. In accordance with the illustrated embodiment, the coupling assembly **350** is in the second mode of operation when the first pusher assembly **317** translates along the second portion of the second stroke and the second portion of the second stroke.

The coupling assembly **350** can include at least one first coupling member **352** illustrated as a first recess **354** that extends radially into the first pusher assembly **317**, such as the plunger **316**, in accordance with the illustrated embodiment. The coupling assembly **350** can further include at least one second coupling member **356** illustrated as a channel **358**, that extends radially through the second pusher assembly **333**, such as the collar **332**, in accordance with the illustrated embodiment. The coupling assembly **350** can further include at least one third coupling member **360** illustrated as a second recess **362** that is carried by the casing **308**. For instance, the insertion instrument **300** can include an inner housing **325** that is carried by the casing **308**, for instance by the proximal wall **324** of the casing **308**. The second recess **362** extends radially outward into the inner housing **325** in accordance with the illustrated embodiment. Alternatively, the second recess **362** could extend radially outward into the casing **308**.

Furthermore, in accordance with the illustrated embodiment, the second recess **362** is disposed distal with respect to the channel **358** when the plunger **316** is in the first position illustrated in FIGS. **7**C and **14**B. The second recess **362** can further be radially offset with respect to the channel **358** when the plunger **316** is in the first position illustrated in FIGS. **7**A and **13**A. Alternatively, the second recess **362** can be radially aligned with respect to the second recess **362** (for instance if the track **342** does not include the intermediate track portion **342***c*, and can alternatively still be annular so as to circumscribe the radially inner surface of the casing **308** if desired.

The coupling assembly **350** can further include at least one fourth coupling member **368** illustrated as a latch **370** that is sized to partially fit in each of the first recess **354**, the second recess **362**. In accordance with the illustrated embodiment, the latch **370** is carried by the collar **332**, and is configured as a leaf spring **371** that is disposed in the channel **358**, which can be provided as a substantially U-shaped aperture or cut-out of the collar **332** so as to define the leaf spring **371**. The leaf spring **371** carries a radially inward projection **373** that is sized to fit into the first recess of the plunger **316**. The latch **370** can be further sized to be disposed in the channel **358**, and is flexible radially inward and outward. Accordingly, the latch **370** can travel along the channel **358** between the first recess **354** (FIG. **14**B) and the second recess **362** (FIG. **14**D).

In accordance with the illustrated embodiment, the coupling assembly **350** is in the first mode of operation when the guide pin **344** is in the first track portion **342***a*, and remains in the first mode of operation when the guide pin **344** travels from the first track portion **342***a* to the intermediate track portion **342***c*, and further remains in the first mode of operation when the guide pin **344** travels along part of the second track portion **342***b*. In particular, the first recess **354** and the channel **358**, and the projection **371** of the latch **370**, can be positioned so as to be radially aligned when the guide pin **344** extends into the any of, and all of as illustrated, the first track portion **342***a*, the intermediate track portion **342***c*, and the portion of the second track portion **342***b*.

Accordingly, in the first mode of operation, the latch **370** is partially disposed in the first recess **354** of the plunger **316**, and extends into the channel **358** of the collar **332**. The latch projection **373** can be sized so as to be captured in the first recess **354**, so as to couple the plunger **316** to the collar **332** with respect to translational movement. As a result, when the latch **370** is coupled to the plunger **316**, the plunger **316** and the collar **332**, and thus the first and second pusher assemblies **317** and **333**, are coupled with respect to movement or translation along the longitudinal direction.

Referring now to FIGS. **14**C-D, because the second recess **362** is sized to receive the latch **370** in accordance with the illustrated embodiment, when the latch **370** moves from the first recess **354** into the second recess **362**, the latch **370** decouples the first pusher assembly **317** from the second pusher assembly **333**, and couples the second pusher assembly **333**, and in particular the collar **332**, to the casing **308** with respect to at least translation and can also couple the collar **332** to the casing **308** with respect to rotation. As described above, the casing **308** is fixed to the cannula **310** with respect to at least translation, and can further be fixed to the cannula **310** with respect to translation. In accordance with the illustrated embodiment, when the plunger **316** is rotated from the second position to the intermediate position such that the guide pin **344** travels along the intermediate track portion **342***c* (see FIGS. **13**C-D), the first recess **354** and the channel **358** are brought into longitudinal alignment with the second recess **362**.

During the first portion of the second stroke (see FIG. **13**E), the plunger **316** and the collar **332** translate longitudinally until the first recess **354** and the channel **358** are aligned with the second recess **362** of the casing **308**. During the transition between the first and second portions of the second stroke (see also FIG. **13**F), the latch **370** is driven (for instance cams) out of the first recess **352** and thus moves from the first recess **352** into the second recess **362**, as illustrated in FIGS. **14**C-D. In accordance with an alternative embodiment, the plunger **316** can include a spring member that biases the latch **370** radially outward from the first recess **352** and into the second recess **362**. Alternatively still, the insertion instrument **300** can be configured such that the latch **370** can cam out of the first recess **352** and move from the first recess into the second recess **362** the as the plunger **316** and the collar **332** rotate past the second recess **362** of the casing **308**. Once the latch **370** has moved out of the first recess **354** and into the second recess **362** while remaining attached to the collar **332**, the plunger **316** can continue to translate distally relative to the collar **332** during the second portion of the second stroke (see FIG. **13**F), which causes the push rod **330** to translate distally relative to the push tube **334**.

Operation of the insertion instrument **300** will now be described with initial reference to FIGS. **7**A-D, **13**A, and FIGS. **14**A-D. In particular, the insertion instrument **300** can be constructed such that when the plunger **316**, and thus the push rod **330**, is in the first position, the first and second anchor bodies **28***a* and **28***b* are disposed in the cannula **310**. In accordance with the illustrated embodiment, the first anchor body **28***a* is disposed longitudinally between the ejection port **442** and the plug **314** of the push tube **334**. When the first pusher assembly **317**, including the plunger **316** and the push rod **330**, and the second pusher assembly **333**, including the collar **332** and the push tube **334**, are in the first position, the coupling assembly releasably couples the first pusher assembly **317** and the second pusher assembly **333** with respect to longitudinal movement and rotational movement. In particular, the latch **370** extends in both the first recess **354** and the channel **358**, thereby releasably coupling the plunger **316** and the collar **332** with respect to longitudinal movement and rotational movement.

Referring now to FIGS. **8**A-D, **13**A-B, and **14**B in particular, the tip **311** can be injected into the anatomical structure **24**, for instance at the second target anatomical location **24***b*, until at least a portion (such as a distal portion) of the ejection port **442** extends distal of, or behind, the anatomical structure **24**. In accordance with the illustrated embodiment, the insertion instrument can include a depth stop **383** that extends radially out from the cannula **310**, and is configured to abut the anatomical structure **24** and provides resistance to further insertion of the cannula **310** into the anatomical structure **24** once the cannula **310** has been injected to a desired depth, for instance such that the ejection port **442** is disposed behind the anatomical structure **24**. In this regard, the depth stop **383** can provide tactile feedback to the user that the cannula **310** has been injected into the target structure **24** at the desired depth. When a distal force is applied to the plunger **316** while the casing **308** remains stationary, for instance when a user grips the casing **308** relatively stationary while applying a distal force to the plunger **316**, the first and second pusher assemblies **317** and **333** translate distally with respect to the casing **308** along the first stroke. As the first and second pusher assemblies **317** and **333** travel distally relative to the casing **308**, the guide pin **344** travels proximally along the first track portion **342***a* of the collar **332** until the guide pin **344** reaches the proximal end **342***a*" of the first track portion **342***a*. As the second pusher assembly **333** travels distally, the plug **314** biases the second anchor body **28***a* to translate distally toward the tip **311**. Furthermore, because the first pusher assembly **317** translates distally with the second pusher assembly **333** relative to the casing **308**, and thus also the cannula **310**, the pusher rod **330** biases the first anchor body **28***b* downstream toward the tip **311** during the first stroke.

Once the guide pin **344** has reached the proximal end **342***a*" of the first guide track portion **342***a*, the plug **314** has translated distal with respect to the proximal end of the ejection port **442**, and thus has biased the second anchor body **28***b* out the ejection port **442** to a location behind the anatomical structure **24**, for instance at the second target anatomical location **24***b* (see FIG. **1**A) along the direction of Arrow B. Thus, the first track portion **342***a* has a longitudinal length sufficient such that movement of the guide pin **344** along the first track portion **342***a* causes the push tube **334** to eject the second anchor body **28***b* from the insertion instrument **300**. Once the plunger **316** and the collar **332** have completed the first stroke, the plug **314** can be spaced proximally from the tip **311**. It should be appreciated that the collar **332** defines a stop at the proximal end **342***a*" of the first track portion **342***a* that prevents further distal translation of the collar **332**, and thus of the push tube **334** and the push rod **330**, before the latch **370** is coupled to the casing **308**, as described above with respect to FIG. **14**C.

Next, referring to FIGS. **9**A-D, once the second anchor body **28***b* has been ejected out the insertion instrument **300**, the distal force can be removed from the plunger **316**, which causes the spring member **365** to bias the second pusher assembly **333**, for instance the collar **332**, and thus also the first pusher assembly **317**, proximally until the guide pin **344** is aligned with the offset position **342***a*''' of the first track portion **342***a*, as described above. Once the guide pin is in the offset position **342***a*''', the guide pin **344** is aligned with the intermediate track portion **342***c*, and the plunger **316** can be rotated to the second track portion **342***b*.

At any time after completion of the first stroke and prior to ejection of the first anchor body **28***a*, the second anchor body **28***b* can be actuated to the expanded configuration illustrated in FIG. **1**B. For instance, referring to FIG. **9**E, the second anchor body **28***b* can be actuated by removing the insertion instrument from the target anatomy **24**. As illustrated at FIG. **9**B, and as described in more detail below with respect to, the insertion instrument **300** includes a strand retention assembly **390** that retains, for instance releaseably retains, at least one tensioning strand **380** that is operably coupled to the actuation portions **131***a* and **131***b* of the first and second anchor bodies **28***a* and **28***b*, extends proximally into the interior **328** of the casing **308** and is releasably connected to the retention assembly **390**. The at least one tensioning strand **380** can be sized and positioned along the actuation strand **131** such that when tension is applied to the tensioning strand **380**, for instance when removing the insertion instrument **300** proximally out of the anatomical structure **24**, and in some embodiments translating the insertion instrument **310** further proximally after removal from the anatomical structure **24**, the tensioning strand **380** communicates the tension to the actuation strand **131***b*, thereby actuating the second anchor body **28***b* to its expanded configuration. Alternatively still, a user can manually apply the actuation force to the respective actuation portion **131***b* as desired. The insertion instrument **300** can further define an elongate side slot **315** that extends through one radial side of the cannula **310** at a location proximal with respect to the ejection port **442**. For instance, the slot **315** can extend from the ejection port **442** and proximally a sufficient distance and sized sufficiently such that the actuation portions **131***a-b* and attachment portions **133** can extends through the slot **315** and attach to the tensioning strand **380**, which extends proximally into the casing **308**. Alternatively, the at least one tensioning strand **380** can be attached to the actuation portions **131***a-b* inside the cannula **310**, and can extend out the slot **315**. Thus, the slot **315** can define a circumferential width that is greater than the thickness of the actuation strands **38***a-b* and the at least one tensioning strand **380**, but less than the thickness of the anchor bodies **28***a* and **28***b* when the anchor bodies **28***a* and **28***b* are in their respective first configurations inside the cannula **310**.

Referring now to FIGS. **10**A-D, **13**C-D, and FIGS. **14**A-D, once the second anchor body **28***b* has been ejected and the guide pin **344** is at the offset position **342***a*''' of the first track portion **342***a*, and the insertion instrument **300** has been removed from the anatomical structure **24**, the tip **311** of the insertion instrument **300** can be injected into the anatomical structure **24** at the first target anatomical location **24***a* in the manner described above with respect to the second target anatomical location **24***b*. The plunger **316** can be rotated along the direction of Arrow A before or after the tip **311** has been injected at the first target anatomical location **24***a* so as to travel along the intermediate stroke, which causes the guide pin **344** to translate along the intermediate track portion **342***c* toward the second track portion **342***b*. The plunger **316** can be rotated along the direction of Arrow A until the plunger **316** is in the intermediate position, whereby the guide pin **344** is longitudinally aligned with the second track portion **342***b*. Once the plunger **316** and collar **332** have rotated to the intermediate position, the plunger **316** and the collar **332** are again able to translate distally with respect to the casing **308**, and the latch **370** is longitudinally aligned with the second recess **362**.

Referring now to FIGS. **11**A-D, **13**D-E, and **14**D, if the insertion instrument **300** was not injected into the first target anatomical location **24***a* prior to driving the plunger **316** to travel along the intermediate stroke, the insertion instrument **300** can be injected into the first target anatomical location **24***a* after driving the plunger **316** to travel along the intermediate stroke, but before driving the plunger **316** to translate along the second stroke. As the plunger **316** and the collar **332** are further driven distally with respect to the casing **308**, the first and second pusher assemblies **317** and **333** translate distally with respect to the casing **308** along a first portion of the second stroke. Translation of the plunger **316** along the first portion of the second stroke causes the guide pin **344** to translate proximally from the intermediate portion to a location between the proximal and distal ends of the second track portion **342***b*.

As the plunger **316** translates distally with respect to the casing **308**, the coupling assembly **350** causes the collar **332**, and thus the push tube **334** including the plug **314**, to correspondingly translate distally with respect to the casing **308** and cannula **310** until the first recess **354** becomes radially aligned with the second recess **362**. Thus, it can be said that movement of the guide pin **344** along the second track portion **342***b* causes the latch **370** to move in alignment with the second recess **362**. The second recess **362** can be positioned such that the latch **370** is radially aligned with the second recess **362** once the plug **314** has translated to a position distal with respect to the tip **311**, and thus distal with respect to the ejection port **442**, which can occur once the plunger **316** has translated along the first portion of the second stroke. Because the plug **314** has translated distal to the ejection port **442**, the plug **314** is removed from interference with the first anchor body **28***a* as the first anchor body **28***a* is ejected out the cannula **310**. Furthermore, because the push rod **330** and the push tube **334** translate together along the first portion of the second stroke, the push rod **330** continues to bias the first anchor body **28***b* downstream in the elongate opening **312** of the cannula **310** toward the tip **311**. As the first and second recesses **354** and **362** become radially aligned at the transition between the first and second portions of the second stroke, the latch **370** is driven from the first recess **354** into the second recess **362**.

Referring now to FIGS. **12**A-D, **13**E-F, and **14**D, once the latch **370** is disposed in second recess **352**, the second pusher assembly **333** becomes coupled to the casing **308** with respect to translation. Because the latch **370** is removed from the first recess **354**, the first pusher assembly **317** is decoupled from the second pusher assembly **333** with respect to translation. Accordingly, the first pusher assembly **317** can translate with respect to the second pusher assembly **333** and the casing **308**, and thus also with respect to the cannula **310**. Thus, it can be said that the latch **370** moves into the second recess **362** so as to translatably decouple the push rod **330** and the push tube **334**, such that the push rod **330** is translatable independently of the push tube **344** so as to eject the first anchor body **28***a* from the insertion instrument **330**.

In accordance with the illustrated embodiment, as the first pusher assembly **317** is further biased distally with respect to the second pusher assembly **333** during the second portion of the second stroke, the plunger **316** and the push rod **330** translate distally with respect to the casing **308**, and thus also the cannula **310**. As a result, the push rod **330**, for instance at its distal end, biases the second anchor body **28***b* to move distally relative to the plug **314**. The plug **314** can define a ramp **376** at its proximal end. The ramp **376** can thus be disposed distal of the ejection port **442** and positioned along the longitudinal axis **302**, and thus aligned with the first anchor body **28***a* as the pusher rod **330** translates along the longitudinal direction and ejects the first anchor body **28***a* out the cannula **310** along the longitudinal direction. The ramp **376** can define a tapered ejection surface **378** that is angled radially outward as it extends distally. Accordingly, as the pusher rod **330** biases the first anchor body **28***a* to translate distally from the ejection port **442** onto the ejection surface **378** as the pusher rod **330** translates relative to the plug **314**, the first anchor body **28***a* rides along the ejection surface **378**, which directs the first anchor body **28***a* away from the insertion instrument **300** at the first target anatomical location **24***a*. Thus, the second track portion **342***b* has a longitudinal length so as to allow the plug **314** to translate to a location distal of the tip **311**, such that distal translation of the push rod **330** ejects the first anchor body **28***a* out the insertion instrument.

While the coupling assembly **350** is configured such that the collar **332** moves along the first stroke with the plunger **316**, moves along the intermediate stroke with the plunger **316**, and moves along a first portion of the second stroke with the plunger **316**, it should be appreciated in accordance with alternative embodiments that the coupling assembly **350** can be configured such that the collar **332** translatably decouples from the plunger **316** after or during the first stroke, or after or during the intermediate stroke.

Referring now to FIG. **12**E, once the first anchor body **28***a* has been injected to the first target location **24***a* at a location behind the anatomical structure **24**, the first anchor body **28***a* can be actuated to its expanded configuration. For instance, the first anchor body **28***a* can be manually expanded by the user applying the actuation force F (FIG. **1**A) to the respective actuation portion **131***a*. In accordance with the illustrated embodiment, the actuation strands **38***a* and **38***b* of the first and second anchor bodies **28***a* and **28***b*, respectively, can be a common strand. Accordingly, the actuation portion **131***a* is integral with the actuation portion **131***b*, and proximal translation of the insertion instrument **300**, for instance upon removal of the insertion instrument **300** from the anatomical structure **24**, can cause the insertion instrument **300** to apply a proximal tensile force onto the tensioning strand **380**, which communicates the tensile force to the second anchor body **28***b*, thereby actuating the second anchor body **28** to its expanded configuration.

Referring now to FIGS. **15**A-E, the coupling assembly **350** can be constructed in accordance with another embodiment, and can include at least one first coupling member **352** illustrated as a first recess **354** that extends radially into the first pusher assembly **317**, such as the plunger **316**, in accordance with the illustrated embodiment. The coupling assembly **350** can further include at least one second coupling member **356** illustrated as a channel **358**, that extends radially through the second pusher assembly **333**, such as the collar **332**, in accordance with the illustrated embodiment. The coupling assembly **350** can further include at least one third coupling member **360** illustrated as a second recess **362** (FIG. **15**C), that extends radially outward into the casing **308** in accordance with the illustrated embodiment. Furthermore, in accordance with the illustrated embodiment, the second recess **362** is disposed distal with respect to the channel **358** when the plunger **316** is in the first position illustrated in FIGS. **7**A and **13**A. The second recess **362** can further be radially offset with respect to the channel **358** when the plunger **316** is in the first position illustrated in FIGS. **7**A and **13**A. Alternatively, the second recess **362** can be radially aligned with respect to the second recess **362** (for instance if the track **342** does not include the intermediate track portion **342***c*, and can alternatively still be annular so as to circumscribe the radially inner surface of the casing **308** if desired.

The coupling assembly **350** can further include at least one fourth coupling member **368** illustrated as a latch **370** that is sized to partially fit in each of the first recess **354**, the second recess **362**. In accordance with the illustrated embodiment, the latch **370** is substantially spherical, and each of the first recess **354** and the second recess **362** can be substantially partially spherical, though it should be appreciated that the latch **370** and each of the first recess **354** and the second recess **362** can define any suitable shape as desired. The latch **370** can be further sized to be disposed in the channel **358**, which can be in the form of a slot that is defined by a longitudinal dimension substantially equal to that of the latch **370**, and is further defined by a radial dimension that is substantially equal to that of the latch **370**. Accordingly, the latch **370** can travel along the channel **358** between the first recess **354** (FIGS. **15**A-B) and the second recess **362** (FIGS. **15**D-E).

In accordance with the illustrated embodiment, the coupling assembly **350** is in the first mode of operation when the guide pin **344** is in the first track portion **342***a*, and remains in the first mode of operation when the guide pin **344** travels from the first track portion **342***a* to the intermediate track portion **342***c*, and further remains in the first mode of operation when the guide pin **344** travels along part of the second track portion **342***b*. In particular, the first recess **354** and the channel **358** can be positioned so as to be radially aligned when the guide pin **344** extends into the any of, and all of as illustrated, the first track portion **342***a*, the intermediate track portion **342***c*, and the portion of the second track portion **342***b*. Further, the latch **370** defines a radial dimension substantially equal to that of the first recess **354** and the channel **358** combined, which is substantially equal to that of the channel **358** and the second recess **362**, combined. Thus, the radial dimension of the latch **370** is also substantially equal to that of the channel **358** and the second recess **362** combined. It should also therefore be appreciated that the first recess **354** and the second recess **362** can define substantially the same radial dimension.

Accordingly, in the first mode of operation, the latch **370** is partially disposed in the first recess **354** of the plunger **316**, and extends into the channel **358** of the collar **332**. The latch **370** can be sized so as to be captured between the casing **308** and the plunger **316**, and to extend through the collar **332** in the channel **358**. Because the first recess **354** is shaped substantially equal to a portion of the latch **370** in the longitudinal and circumferential directions, longitudinal and rotational motion of the plunger **316** correspondingly causes the latch **370** to move longitudinally and rotationally, respectively, along with the plunger **316** when the latch **370** is disposed in the first recess **354**. Furthermore, because the channel **358** is dimensioned substantially equal to that of the latch **370** in both the longitudinal and circumferential directions, longitudinal and rotational motion of the latch **370** correspondingly causes the collar **332** to move longitudinally and rotationally, respectively. As a result, when the latch **370** is disposed in the first recess **354** and the channel **358**, the plunger **316** and the collar **332**, and thus the first and second pusher assemblies **317** and **333**, are coupled with respect to movement or translation along the longitudinal direction, and are further coupled with respect to rotation or movement in the radial direction.

Referring now to FIGS. **15**C-E, because the second recess **362** is shaped substantially equal to a portion of the latch **370** in accordance with the illustrated embodiment, when the latch **370** moves from the first recess **354** into the second recess **362**, the latch **370** decouples the first pusher assembly **317** from the second pusher assembly **333**, and couples the second pusher assembly **333**, and in particular the collar **332**, to the casing **308** with respect to at least translation and can also couple the collar **332** to the casing **308** with respect to rotation. As described above, the casing **308** is fixed to the cannula **310** with respect to at least translation, and can further be fixed to the cannula **310** with respect to translation. In accordance with the illustrated embodiment, when the plunger **316** is rotated from the second position to the intermediate position such that the guide pin **344** travels along the intermediate track portion **342***c* (see FIGS. **13**C-D), the first recess **354** and the channel **358** are brought into longitudinal alignment with the second recess **362**.

During the first portion of the second stroke (see FIG. **13**E), the plunger **316** and the collar **332** translate longitudinally until the first recess **354** and the channel **358** are aligned with the second recess **362** of the casing **308**. During the transition between the first and second portions of the second stroke (see also FIG. **13**F), the latch **370** is driven (for instance cams) out of the first recess **352** and thus moves from the first recess **352** into the second recess **362**. In accordance with an alternative embodiment, the plunger **316** can include a spring member that biases the latch **370** radially outward from the first recess **352** and into the second recess **362**. Alternatively still, the insertion instrument **300** can be configured such that the latch **370** can cam out of the first recess **352** and move from the first recess into the second recess **362** the as the plunger **316** and the collar **332** translate past the second recess **362** of the casing **308**. Once the latch **370** has moved out of the first recess **354** and into the second recess **362** while remaining disposed in the channel **358** of the collar **332**, the plunger **316** can continue to translate distally relative to the collar **332** during the second portion of the second stroke (see FIG. **13**F), which causes the push rod **330** to translate distally relative to the push tube **334**.

Referring now to FIGS. **16**A-**17**D, the anchor assembly **20** can include at least one tensioning member, such as a tensioning strand **380** that can be stitched through the first and second actuation strands **38***a* and **38***b*, respectively, of the first and second anchor bodies **28***a* and **28***b*. The anchor assembly **20** can include as many tensioning strands as desired that extend through one or both of the first and second actuation strands **38***a* and **38***b*. The tensioning strand **380** defines a first end **380'**, a second end **380"**, and a middle portion **380'"** that extends between the first and second ends **380'** and **380"**.

The tensioning strand **380** can be stitched through the first actuation strand of at least one of the anchor bodies **28***a* and **28***b*. In accordance with the illustrated embodiment, the tensioning strand **380** is stitched through the first actuation strand, and in particular through the first actuation portion **131***a* and the first attachment portion **133***a* of the first anchor body **28***a*. For instance, the first tensioning stand **380***a* can be threaded onto a needle, which is driven through the first actuation strand **38***a*, so as to insert the tensioning strand **380** through the actuation strand **38***a*, such that the tensioning strand **380** is connected to the actuation strand **38***a* at a location closer to the first anchor body **28***a* than the second anchor body **28***b*.

Referring now to FIGS. **7**C and **17**A-D the insertion instrument **300** can include a retention assembly, such as a strand retention assembly **390**, that is configured to retain the at least one tensioning strand **380**, and in particular the first and second ends **380***a*' and **380"** of the tensioning strand **380**. In accordance with one embodiment, the retention assembly releasably retains the tensioning strands **380**. As will now be described, the retention assembly **390** is translatably fixed to the first pusher assembly **317**, and thus moves proximally and distally along the longitudinal direction L along with the plunger **316**. Accordingly, the tensioning strand **308** provides sufficient slack for the implantation of the first and second anchor bodies **28***a* and **28***b* in the respective target anatomical locations **24***a* and **24***b*. After the second anchor body **28***b* has been ejected from the cannula **310**, proximal movement of the insertion instrument **300**, for instance when removing the instrument from the anatomical structure **24**, causes the retention assembly **390** to move in the proximal direction, thereby applying the tensile actuation force to the second tensioning strand **380**, which communicates the actuation force to the second actuation portion **131***b* of the second actuation strand **38***b*, and causes the second anchor body **28***b* to expand. Similarly, after the first anchor body **28***a* has been ejected from the cannula **310**, proximal movement of the insertion instrument **300**, for instance when removing the instrument from the anatomical structure **24**, causes the retention assembly **390** to move in the proximal direction, thereby applying the tensile actuation force to the tensioning strand **380**, which communicates the actuation force to the first actuation portion **131***a* of the first actuation strand **38***a*, and causes the first anchor body **28***a* to expand.

The retention assembly **390** includes a retention housing **392** having a housing body **394** that is supported, directly or indirectly, by the plunger **316** is coupled to the distal end **316***a* of the plunger **316** in accordance with the illustrated embodiment. The housing body **394** is further coupled to the push rod **330**, which extends distally from the retention assembly **390**. The retention housing **392** includes a first locking member **400** and a second locking member **402** that extend from opposite, for instance laterally opposite, ends of the housing body **394**. The first and second locking members **400** and **402** are configured to retain the respective first and second opposed ends **380'** and **380"** of the tensioning strand **380**. The first locking member **400** is configured to be disengaged so as to release the first end **380'**. The second locking member **402** is configured to retain the second end **380"** of the tensioning strand **380** when the first locking member **400** is released.

In accordance with the illustrated embodiment, the first locking member **400** includes a locking body **407**, and a clip **409** that is configured to be removably secured to the locking body **407**. For instance, the clip **409** can be hingeably attached to the locking body **407**, or otherwise movably attached to the locking body **407** as desired. The retention housing **392** can define a retention channel **411** disposed between the locking body **407** and the clip **409**. The retention channel **411** can have any suitable shape as desired, and defines a serpentine shape in accordance with the illustrated embodiment. When the clip **409** is secured to the locking body **407**, the retention channel **411** has a thickness less than that of the first end **380'** of the tensioning strand **380**. The clip **409** includes an outwardly projecting release tab **413** that is configured to receive a release force so as to release the clip **409** from the locking body **407**, thereby freeing the first end **380'** of the retention strand **380** from the retention assembly **39**, as is described in more detail below.

In accordance with the illustrated embodiment, the second locking member **402** includes a second locking body **415**, and a second clip **417** that is configured to be secured to the second locking body **415**. The retention housing **392** can define a second retention channel **419** disposed between the second locking body **415** and the second clip **417**. The second retention channel **419** can have any suitable shape as desired, and defines a serpentine shape in accordance with the illustrated embodiment. When the second clip **417** is secured to the second locking body **415**, the second retention channel **419** has a thickness less than that of the second end **380"** of the tensioning strand **380**.

Thus, during operation, the first end **380'** of the tensioning strand **380** can extend through the first retention channel **411** and the clip **409** can be secured to the locking body **407**, thereby releasably locking the first end **380'** of the tensioning strand **380** in the first locking member **400**. Similarly, the second end **380"** of the tensioning strand **380** can extend through the second retention channel **419** and the second clip **417** can be secured to the second locking body **415**, thereby releasably locking the second end **380"** of the tensioning strand **380** in the second locking member **402**. When the first and second ends **380'** and **380"** are secured to the retention assembly, the insertion instrument can translate proximally once the first and second anchors **28***a* and **28***b* have been implanted to thereby deliver the tensile actuation force to the tensioning strand **380**, which communicates the tensile actuation force to the respective actuation portions of the anchor bodies, thereby causing the anchor bodies to expand in the manner described above.

The retention assembly **490** further includes an actuator assembly **421** that is configured to release the first locking member **400**. In particular, the actuator assembly **421** can include an actuator or button **423** that is carried by the casing **308** (see FIG. **7**C), and at least one biasing member, such as a pair of arms **425** that extend into the interior **328** of the casing **308** from the button **423**. It is recognized that the first anchor body **28***a* is ejected from the instrument **300** once the plunger **316** has completed the second stroke. Accordingly, the actuator assembly **421** is positioned such that the arms contact the retention housing **492** once the plunger **316** has reached the end of the second stroke.

Referring to FIGS. **12**C and **17**C, As the plunger **316** reaches the end of the second stroke, the arms **425** ride along outer surfaces of the first and second locking bodies **407** and **415**, respectively, which causes the button **423** to raise radially outwardly from an unloaded position to a loaded position. Once the plunger **316** has reached the end of the second stroke, one of the arms is aligned with the release tab **413**. Accordingly, the button **423** can be depressed, which causes one of the arms **425** to drive the release tab **413** away from the first locking body **407**, which causes the clip **409** to move into an unlocked position whereby the clip **409** is removed from the locking body **407** a sufficient amount such that the retention channel **411** is thicker than the first end **380'** of the tensioning strand **380**. As a result, the first end **380'** becomes unlocked from the retention assembly **390**, and the instrument can be moved proximally so as to draw the tensioning strand **380** through the actuation strands of the anchor bodies.

Referring now to FIG. **18**A, the anchor assembly **20** can alternatively include a pair of tensioning members, such as a first tensioning strand **380***a* and a second tensioning strand **380***b* that can be stitched through the first and second actuation strands **38***a* and **38***b*, respectively, of the first and second anchor bodies **28***a* and **28***b*. The anchor assembly **20** can include as many tensioning strands as desired that extend through one or both of the first and second actuation strands **38***a* and **38***b*. The first tensioning strand **380***a* defines a first end **380***a*', a second end **380***a*", and a middle portion **380***a*'" that extends between the first and second ends **380***a*' and **380***a*". Similarly, the second tensioning strand **380***b* defines a first end **380***b*', a second end **380***b*", and a middle portion **380***b*'" that extends between the first and second ends **380***b*' and **380***b*".

The first tensioning strand **380***a* can be stitched through the first actuation strand **38***a*, for instance through opposed ends of the first actuation strand **38***a*. For instance, the first tensioning stand **380***a* can be threaded onto a needle, which is driven through the first actuation strand **38***a*, so as to insert the first tensioning strand **380***a* through the first actuation strand **38***a*. The first tensioning strand **380***a* can extend through the first attachment portion **133***a* and the first actuation portion **131***a* of the first actuation strand **38***a*, and can loop back through the first actuation portion **131***a* and the first attachment portion **133**_a_, at a location between the first and second anchor bodies **28**_a_ and **28**_b_.

Similarly, the second tensioning strand **380**_b_ can be stitched through the second actuation strand **38**_b_, for instance through opposed ends of the second actuation strand **380**_b_. For instance, the second tensioning stand **380**_b_ can be threaded onto a needle, which is driven through the second actuation strand **38**_b_ so as to insert the second tensioning strand **380**_b_ through the second actuation strand **38**_b_. The second tensioning strand **380**_b_ can extend through the first attachment portion **133**_b_ and the actuation portion **131**_b_ of the second actuation strand **38**_b_, and can loop back through the second attachment portion **133**_b_ and the second actuation portion **131**_b_ at a location between the first and second anchor bodies **28**_a_ and **28**_b_.

Referring now to FIGS. **19**A-B, the strand retention assembly **390** can be constructed in accordance with an alternative embodiment to releasably retain the at least one tensioning strand **380**. Thus, while the strand retention assembly **390** illustrated in FIGS. **19**A-B are illustrated as retaining the pair of first and second tensioning strands **380**_a_ and **380**_b_, the retention assembly **390** can alternatively releasably retain a single tensioning strand, for instance as described above with respect to FIGS. **16-17**. In accordance with the embodiment illustrated in FIGS. **19**A-B, the retention assembly **390** retains the first and second ends **380**_a_' and **380**" and **380**_b_' and **380**_b_" of the first and second tensioning strands **380**_a_ and **380**_b_. In accordance with one embodiment, the retention assembly **390** releasably retains the first and second tensioning strands **380**_a_ and **380**_b_. As will now be described, the retention assembly **390** is translatably fixed to the first pusher assembly **317**, and thus moves proximally and distally along the longitudinal direction L along with the plunger **316**. Accordingly, after the second anchor body **28**_b_ has been ejected from the cannula **310**, movement of the plunger **316** and the push rod **330** in the proximal direction causes the retention assembly **390** to move in the proximal direction, thereby applying the tensile actuation force to the second tensioning strand **380**_b_, which communicates the actuation force to the second actuation portion **131**_b_ of the second actuation strand **38**_b_, and causes the second anchor body **28**_b_ to expand. Similarly, after the first anchor body **28**_a_ has been ejected from the cannula **310**, movement of the plunger **316** and the push rod **330** in the proximal direction causes the retention assembly **390** to move in the proximal direction, thereby applying the tensile actuation force to the first tensioning strand **380**_a_, which communicates the actuation force to the first actuation portion **131**_a_ of the first actuation strand **38**_a_, and causes the first anchor body **28**_a_ to expand.

The retention assembly **390** includes a retention housing **392** having a housing body **394** that is supported, directly or indirectly, by the casing **308**. In accordance with the illustrated embodiment, the retention housing **392** is disposed in the interior **328** of the casing **308**, though the retention housing **392** can alternatively be carried external of the casing **308**, and can be attached to the plunger **316** or any suitable alternative structure of the insertion instrument **300** as desired. The retention housing **392** defines a bore **396** that extends longitudinally into the housing body **394** along the proximal direction. In accordance with the illustrated embodiment, the bore **396** extends longitudinally through the housing body **394**. The housing body **394** can define at least one interior surface **398** that defines a perimeter of the bore **396**. The interior surface **398** can slope (for instance linearly, curvilinearly, or along any suitable alternative shape) radially outward as it travels proximally along a direction from a distal end of the housing body **394** to a proximal end of the housing body **394**. Thus, the bore **396** can define a first cross-sectional dimension D**3** along a direction substantially perpendicular to the longitudinal axis **302** at its first or proximal end, and a second cross-sectional dimension D**4** along a direction substantially perpendicular to the longitudinal axis **302** at its second or distal end. Because the bore **396** can be tapered, the first cross-sectional dimension D**3** can be less than the second cross-sectional dimension D**4**. The bore **396** can be tapered, for instance linearly, curvilinearly, or along any suitable alternatively shape as desired.

The retention assembly **390** can further include a first locking member **400** that is disposed inside the bore **396**. The first locking member **400** has a cross-sectional dimension D**5**, for instance along a direction substantially perpendicular to the longitudinal axis **302**, that is between the first cross-sectional dimension D**3** and the second cross-sectional dimension D**4**. The first locking member **400** can be substantially spherical as illustrated, or can alternatively define any shape as desired. The retention assembly **390** is configured to retain at least one strand between the first locking member **400** and the interior surface **398** of the housing body **394**. For instance, the first end of at least one or both of the tensioning strands **380**_a_' and **380**_b_' can extend between the first locking member **400** and the interior surface **398**. The first locking member **400** is configured to bear against the interior surface **398** during operation of the instrument, thereby capturing the first ends **380**_a_' and **380**_b_' between the first locking member **400** and the interior surface **398** of the housing body **394**, and preventing relative movement between each of the first ends **380**_a_' and **380**_b_' and the retention housing **392**. Thus, the first locking member **400** can present a first locking surface, and the interior surface **398** can present a second locking surface that cooperates with the first locking surface so as to retain the first ends **380**_a_' and **380**_b_' of the first and second retention strands **380**_a_ and **380**_b_ in the retention assembly **390**.

The retention assembly **390** can further include a second locking member **402** that is configured to be attached to the first locking member **400**. In particular, the second locking member **402** can include a threaded plug **403** that is threadedly inserted into the proximal end of the housing body **394**. Accordingly, the second locking member **402** can be disposed adjacent the tapered inner surface **398**, and can close the proximal end of the tapered bore **396**. Alternatively, the second locking member **402** can be integral with the housing body **394**. The second locking member **402** defines at least one opening, such as a longitudinal opening **404**, that is configured to receive the end of the one or more tensioning strands that are opposite the end of the tensioning strands that are captured between the first locking member **400** and the interior surface **398** of the housing body **394**. Accordingly, the second locking member **402** is configured to receive each of the second ends **380**_a_" and **380**_b_" of the first and second tensioning strands **380**_a_ and **380**_b_. The second locking member **402** can thus be aligned with the tapered bore **396**, such that the second end **380**_a_" and **380**_b_" of each of the first and second strands **380**_a_ and **380**_b_ extends through the tapered bore **396** and is attached to the second locking member **402**.

In accordance with the illustrated embodiment, the longitudinal opening **404** extends longitudinally between the bore **396** and the exterior of the plug **403**, which can be the interior **328** of the casing **308**. Each or both of the second ends **380**_a_" and **380**_b_" can be tied in a knot **406** at the proximal end of the longitudinal opening **404**, such that the knot **406** abuts the proximal end of the second locking member **402**. Thus, the retention assembly **390** is configured to fix the first and second ends **380***a*' and **380***a*" of the first tensioning strand **380***a*, and is further configured to fix the first and second ends **380***b*' and **380***b*" of the second tensioning strand **380***b*. The second ends **380***a*" and **380***b*" can alternatively or additionally extend between the first locking member **400** and the interior surface **398**, and can be captured between the first locking member **400** and the interior surface **398** as desired so as to retain the second ends **380***a*" and **380***b*" in the retention assembly **390**. The second locking member **402** can further include a second longitudinal opening **405** that is spaced from the longitudinal opening **404**. The second longitudinal opening **405** is configured to receive the remainder of the first ends **380***a*' and **380***b*' that are captured between the first locking member **400** and the interior surface **398**.

Referring to FIG. **19**C, the first pusher assembly **317** can include a pair of flanges **319** that project out from the plunger **316** so as to define a gap **321** that extends between the flanges **319**. The gap **321** can be sized to receive the housing body **394**, such that each of the flanges **319** abuts the proximal and distal ends of the housing body **394**, respectively. Accordingly, proximal movement of the plunger **316** causes the distal one of the flanges **319** to bias the housing body **394** and thus the retention assembly **390**, to move proximally along with the plunger **316**, and therefore also along with the push rod **330**. Similarly, distal movement of the plunger **316** causes the proximal one of the flanges **319** to bias the housing body **394** and thus the retention assembly **390**, to move distally along with the plunger **316**, and therefore also along with the push rod **330**.

During operation, because the plunger **316** and the push rod **330** move distally in tandem along the first stroke and the second stroke, and because the first and second anchor bodies **28***a* and **28***b* move distally along with the push rod **330**, the retention assembly **390** likewise moves distally along with the first and second anchor bodies **28***a* and **28***b*. Accordingly, the retention assembly **290** can operate so as to not induce tension in either of the first and second tensioning strands **380***a* and **380***b*, and thus in the respective first and second actuation strands **38***a* and **38***b*, before the first and second anchor bodies **28***a* and **28***b* have been ejected from the cannula **310**. However, as will now be described, the insertion instrument **300**, and in particular the plunger **316**, can be actuated so as to apply the respective first and second actuation forces to the first and second anchor bodies **28***a* and **28***b* after the first and second anchor bodies have been ejected from the cannula **310**.

For instance, referring now to FIGS. **8**A-D and FIGS. **19**A-B, once the plunger **316** has traveled along the first stroke, thereby ejecting the second bone anchor **28***b* from the cannula **310** at a location behind the anatomical structure **24** and the second anatomical location **24***b*, the plunger **316** can be translated proximally such that the guide pin **344** rides along the first track portion **342***a* along the distal direction until contacting the collar **332**, which provides stop surface at the distal end of the first track portion **342***a*, thereby preventing further proximal translation of the plunger. Because contact between the anatomical structure **24** and the second anchor body **28***b* prevents the second anchor body **28***b* from translating proximally along with the retention assembly **390**, the retention assembly applies a tensile force to the tensioning strand **380***b*, which is communicated to the second actuation strand **38***b* as the actuation force that causes the second anchor body **28***b* to move from the first configuration illustrated in FIG. **9**A to the expanded configuration illustrated in FIG. **9**E.

For instance, referring now to FIGS. **9**A-E and FIGS. **19**A-B, once the plunger **316** has traveled along the first stroke, thereby ejecting the second bone anchor **28***b* from the cannula **310** at a location behind the anatomical structure **24** at the second anatomical location **24***b*, the insertion instrument **300** can be translated proximally as it is removed from the anatomical tissue **24** as described above. Because contact between the anatomical structure **24** and the second anchor body **28***b* prevents the second anchor body **28***b* from translating proximally along with the insertion instrument **300**, the retention assembly **390** applies a tensile force to the tensioning strand **380***b*, which is communicated to the second actuation strand **38***b* as the actuation force that causes the second anchor body **28***b* to move from the first configuration illustrated in FIG. **9**A to the expanded configuration illustrated in FIG. **9**E.

Similarly, referring now to FIGS. **18**A-E and FIGS. **19**A-B, once the plunger **316** has traveled along the second portion of the second stroke, thereby ejecting the first bone anchor **28***a* from the cannula **310** at a location behind the anatomical structure **24** at the first anatomical location **24***a*, the insertion instrument **300** can be translated proximally as it is removed from the anatomical tissue **24**. Because contact between the anatomical structure **24** and the first anchor body **28***a* prevents the first anchor body **28***a* from translating proximally along with the retention assembly **390**, the retention assembly **390** applies a tensile force to the first tensioning strand **380***a*, which is communicated to the first actuation strand **38***a* as the actuation force that causes the first anchor body **28***a* to move from the first configuration illustrated in FIG. **12**A to the expanded configuration illustrated in FIG. **12**E.

Once the first and second anchor bodies **28***a* and **28***b* have been actuated to their expanded configurations, the tensioning strands **380***a* and **380***b* can be released from the retention assembly **390**. For instance, as will now be described, the retention assembly **390** can configured to release at one of the ends of the tensioning strands **380***a* and **380***b*. Alternatively, as described in more detail below, the insertion instrument **300** can include a cutting blade that is configured to sever the first and second tensioning strands **380***a* and **380***b*. Referring to FIG. **19**C, the insertion instrument **300** can include a release member **408** that is coupled to the retention assembly **390** and is configured to iterate the retention assembly **390** to an unlocked configuration. The release member **480** can include any suitable linkage **410** that can be aligned with the first locking member **400**. The release member **408** can include an actuator **414** that is carried by the casing **308** and coupled to the linkage **410**, such that a user can manipulate the actuator **414**, for instance slide the actuator proximally, so as to cause the linkage **410** to contact the first locking member **400** and bias the first locking member **400** proximally along the direction of Arrow **401** to an unlocked configuration, which creates a gap **412** between the first locking member **400** and the interior surface **398**, as illustrated in FIG. **19**B. The gap can be greater than a cross-sectional dimension of the tensioning strands **380***a* and **380***b*.

When the second ends **380***a*" and **380***b*" are tied at the second locking member **402**, proximal translation of the insertion instrument **300** relative to the implanted anchor bodies **28***a* and **28***b*, causes the first ends **380***a*' and **380***b*' of the first and second tensioning strands **380***a* and **380***b* to travel out the retention assembly **390** through the gap, and further draws the respective first and second tensioning strands **380***a* and **380***b* through the respective actuation strands **38***a* and **38***b*, thereby removing the first and second tensioning strands **380***a* and **380***b* from the actuation strands **38***a* and **38***b* as illustrated in FIGS. **18**C-**18**D. Alternatively, if the first and second ends **380***a*" and **380***b*" are retained by the first locking member **400** and not the second locking member **402**, proximal translation of the insertion instrument **300** relative to the implanted anchor bodies **28***a* and **28***b* removes the tensioning strands **380***a* and **380***b* from the insertion instrument **300**. The user can then manually draw the tensioning strands **380***a* and **380***b* through the respective actuation strands **38***a* and **38***b* so as to remove the first and second tensioning strands **380***a* and **380***b* from the actuation strands **38***a* and **38***b*.

Referring now to FIG. **18**D, once the tensioning strands **380***a* and **380***b* have been removed from the actuation strands **38***a* and **38***b*, the user can draw the connector **63** toward the anatomical structure. It should be appreciated that the connector **63** can be attached to the actuation strands **38***a* and **38***b* when the first and second anchor bodies **28***a* and **28***b* are loaded in the insertion instrument **300**. Alternatively, the user can connect the actuation strands **38***a* and **38***b* after the first and second anchor bodies **28***a* and **28***b* have been ejected. While the connector member **63** illustrated in FIGS. **18**C-E is configured as a knot of the type described above, the connector member **63** can be alternatively configured as desired. In accordance with the embodiment illustrated in FIGS. **18**C-E, a tensile force can be applied to the free end **70**, which causes the connector member to translate toward the anatomical structure, thereby applying an approximation force to the actuation strands **38***a* and **38***b*, thereby approximating the tissue gap **24***c*. The portion of the actuation strands **38***a* and **38***b* that extend out from the connector member **63** can then be severed as desired.

Referring now to FIGS. **20**A-B, and as described above, the insertion instrument **300** can include a cutting assembly **416** that includes a cutting blade **418**, and is movable between a disengaged position whereby the cutting blade **418** is spaced from one of the ends, such as the first ends **380***a*' and **380***b*' of the tensioning strands **380***a* and **380***b* that are retained by the retention assembly **390**, and an engaged position whereby the cutting blade severs the first ends **380***a*' and **380***b*' of the tensioning strands **380**. It should be appreciated that the retention assembly **390** illustrated in FIGS. **20**A-B can be configured as illustrated in FIG. **17**, and that the retention assembly **390** can be attached to a single tensioning strand, such that the cutting blade **418** is configured to cut a first end of the single tensioning strand, such that removal of the insertion instrument **300** from the anchor bodies **28***a* and **28***b* draws the tensioning strand through and away from actuation strands **38***a* and **38***b*.

The cutting assembly **416** can include a longitudinally elongate shaft **420**, and a switch **422** that is pivotally coupled between the elongate shaft **420** and the cutting blade **418**, thereby coupling the elongate shaft **420** to the cutting blade **418**. The cutting blade **418** can be carried by a blade housing **424**, such that the elongate shaft **420** and the switch **422** are indirectly coupled to the cutting blade **418**. The proximal end of the longitudinally elongate shaft **420** can extend proximally out of the casing **408**, and the longitudinal shaft can extend in a side wall of the casing **408**. The shaft **420** is movable longitudinally in the distal direction from a disengaged position to an engaged position. Distal movement of the shaft **420** causes the switch to pivot, thereby driving the cutting blade **418** to translate proximally and into the first ends **380***a*' and **380***b*' of the first and second tensioning strands **380***a* and **380***b*, thereby severing the first ends **380***a*' and **380***b*'. Once the tensioning strands **380***a* and **380***b* have been severed, the instrument can be translated proximally with respect to the ejected anchor bodies **28***a* and **28***b* so as to remove the tensioning strands **380***a* and **380***b* from the respective actuation strands **38***a* and **38***b* in the manner described above.

Referring now to FIGS. **21**A and **21**B, it should be appreciated that the cutting assembly **416** can be constructed in accordance with any alternative embodiment as desired. For instance, the cutting assembly **416** can include an actuator **426** that extends laterally out the side wall of the casing **408** along a direction angularly offset with respect to the longitudinal direction L, and is movable radially inward from the disengaged position to the engaged position. The actuator **426** can carry the cutting blade **418**. Accordingly, as the actuator **426** moves radially inward, the cutting blade **418** severs the first and second ends **380***a*' and **380***b*' of the actuation strands **380***a* and **380***b*. The insertion instrument **300** can include a divider wall **428** that separates the first and second ends of the actuation strands **380***a* and **380***b* and is aligned with the cutting blade **418**. Accordingly, the cutting blade **418** drives into the divider wall **428** and does not sever the second ends of the first and second actuation strands **380***a* and **380***b*. Of course, it should be appreciated that a single tensioning strand can be coupled to the actuation strand **38** of the anchor assembly **20** as described above, such that the cutting blade **418** can cut one of the first and second ends of the single tensioning strand.

Referring now to FIGS. **22**A-D generally, the insertion instrument **300** can be constructed substantially as described above with respect to FIG. **7**A-**21**B, but can include the guide system **329** that operably couples the casing **308** and the push rod **330** so as to guide relative movement between the casing **308** and the push rod **330** in accordance with another embodiment. For instance, the guide track **342** can be defined in the collar **332** as described above, but extends substantially linearly along the longitudinal direction L. Accordingly, as the plunger translates distally along the first and second strokes, the guide track **342** translates linearly with respect to the guide pin **344**. It should be appreciated in the embodiment illustrated in FIGS. **22**A-D, the second recess **362** illustrated in FIGS. **13**C-E can be longitudinally aligned with the first recess **354**, such that the latch **370** moves from the first recess **354** into the second recess **362** so as to decouple the plunger **316** from the collar **332** without rotating the plunger **316**. The plunger **316** can include a shaft portion **430** that defines a portion of the key **318** as described above, and a distal end cap that can define a grip portion **432** that extends radially out from the proximal end of the shaft portion **430**. The collar **332** can extend at least partially around the shaft portion **430**, and can extend radially out from the shaft portion **430** in accordance with the illustrated embodiment.

The insertion instrument **300** can further include a clip **434** that has a longitudinal length substantially equal to the longitudinal distance between the grip portion **432** of the plunger **316** and the proximal end of the collar **332** when the plunger **316** is in the first position. The clip **434** can be removably secured to the shaft portion **430** of the plunger **316**. Thus, as the plunger **316** translates distally, the grip portion **432** biases the clip **434** against the collar **332**, which causes the collar **332** to translate along with the plunger **316**. It should therefore be appreciated that the clip **434** couples the plunger **316** and the collar **332** with respect to distal translation along the longitudinal direction L. Accordingly, during operation, the plunger **316** and collar **332** can be translated distally from the first position to the second position in tandem along the first stroke in the manner described above. As the plunger **316** and collar **332** move along the first stroke, the guide pin **344** translates proximally within the entire guide track **342**. The plunger **316** and collar **332** reach the second position when the clip **434** abuts the casing **308**, at which point the latch member **370** moves from the first recess **354** into the second recess **358** as described above with respect to FIGS. **14**C-D. Next, the clip **434** can be removed from the plunger **316**, and the plunger **316** can translate distally with respect to the collar **332** along the second stroke. It should be appreciated that the plunger **316** can translate along the entire second stroke independent of the collar **332**.

Accordingly, the push tube **334** ejects the second anchor body **38***b* as described above with respect to FIGS. **9**A-E after the plunger and collar **332** have moved along the first stroke from the first position to the second position. Thus, the plunger **316** can be depressed a first distance that causes the second anchor body **28***b* to be ejected from the insertion instrument, and the clip **434** abuts the casing **308** once the plunger **316** has been depressed the first distance so as to prevent the plunger **316** from being depressed a second distance greater than the first distance until the collar **434** is removed from the plunger **316**. The push rod **330** can then eject the first anchor body **28***a* after the plunger **136** has moved from the second position to the third position along the second stroke in the manner described above with respect to FIGS. **12**A-E. The guide pin **344** can abut the proximal end of the guide track **342** when the second stroke has been completed. Furthermore, the grip portion **432** of the plunger **316** can abut the casing **308** once the plunger **316** has completed the second stroke and has moved to the third position. It should be appreciated in the embodiment illustrated in FIGS. **22**A-D that because the plunger **316** is rotatably keyed to the collar **332** and thus rotatably fixed to the collar **332**, and because the latch **370** (described above) rotatably couples the collar **332** to the casing **308**, the plunger **316** is unable to rotate with respect to the casing **308** as the plunger **316** translates along the second stroke. Alternatively, the insertion instrument can be configured to allow the plunger **316** to rotate as desired so as to align the latch **370** with the second recess **362**, as described above.

As described above with respect to the insertion instrument illustrated in FIGS. **7**A-**13**G, the guide track **342** can be carried by the casing **308**, and the guide pin **344** can be carried by one of the pusher assemblies. Referring now to FIG. **23**A, the insertion instrument **300** includes at least one guide track, such as a first guide track **446** that is carried by the casing **308**, and at least a one guide member such as a first guide pin **448** carried by the pusher assembly **317**, and in particular carried by the plunger **316**, that rides in the first guide track **342**.

As illustrated in FIG. **23**B, the shaft portion **430** of the plunger **316** defines a distal surface **431**, and further defines a first central aperture **440** that extends longitudinally into, or distally into, the distal surface **431**. The shaft portion **430** of the plunger **316** further defines a radial aperture **435** that receives the guide pin **448**. The first aperture **440** receives the push rod **330**, such that the plunger **316** and the push rod **330** are coupled to each other with respect to both longitudinal translation and rotation. As illustrated in FIG. **23**D, the push rod **330** extends from the plunger **316** and into the cannula **310**, which is fixed to the casing **308** with respect to translation and rotation. Referring also to FIG. **23**C, the tip **311** can be cannulated so as to define a distal ejection port **442** that is substantially aligned with the longitudinal axis **302**, and thus also substantially aligned with the elongate opening **312** of the cannula **310**. The push rod **330** is movable longitudinally inside the channel **312** in the manner described above. It should be appreciated that the insertion instrument **300** can alternatively define a side ejection port constructed substantially as described below. The cannula **310** can define a longitudinal slot **337**, such that the attachment portions **133***a* and **133***b* of the actuation strands **38***a* and **38***b* (see FIG. **1**A) that attach the first anchor body **28***a* to the second anchor body **28***b* can extend out the slot **337**.

Referring now also to FIGS. **23**D-E, the insertion instrument includes a guide system **444** that is configured to operably couple the casing **308** to the push rod **330** so as to guide relative movement between the casing **308** and the push rod **330**. For instance, the guide system **444** includes the first guide member in the form of the first guide track **446** that is carried by the casing **308**, and the second guide member illustrated as the first guide pin **448** that extends from the pusher assembly **317**. The first guide track **446** can be configured as a slot that extends radially outward into the radially inner surface of the casing **308**. Furthermore, in accordance with the illustrated embodiment, the first guide pin **448** extends radially out from the shaft portion **430** of the plunger **316**, and rides within the first guide track **448**. The first guide track **446** defines a first track portion **446***a* that extends substantially longitudinally, and an intermediate track portion **446***b* that extends circumferentially from the distal end of the first track portion **446***a*.

With continuing reference to FIG. **23**E, the guide system **444** further includes a third guide member configured as a second guide track **450** that is carried by the casing **308**, and is configured as a slot that extends radially outward into the inner surface of the casing **308**. The second guide track **450** defines a first track portion **450***a* that extends substantially longitudinally, and an intermediate track portion **450***b* that extends circumferentially from the distal end of the second guide track **450***b*. The intermediate track portion **450***b* extends from the first track portion **450***a* the same direction that the intermediate track portion **446***b* extends from the first track portion **446***a*.

The first track portions **446***a* and **450***a* define a first stroke of movement for the plunger **316** that causes the push rod **330** to eject the second anchor out the ejection port **442**. The intermediate track portions **446***ba* and **450***b* are configured such that the plunger is rotated so as to align a fifth guide member with a second track portion that is radially offset from the first track portions **446***a* and **450***a*. In particular, as illustrated in FIG. **23**B, the insertion instrument **330** further includes a pair of apertures **452** that are disposed adjacent the central aperture **440** and extend longitudinally into the distal surface **431** of the shaft portion **430** of the plunger **416**. The apertures **452** are each configured to receive respective fifth guide members configured as guide posts **454** (FIG. **23**D) that extend distally from the plunger **416**, and a sixth guide member illustrated as a guide housing **460** (FIG. **23**E) that is disposed in the interior **328** of the casing **308** and fixed to the casing **308** with respect to translation. The guide housing **460** defines a seventh guide member configured as a radially outwardly extending second guide pin **461** that is configured to ride in the second guide track **450**. The guide housing **460** further defines a guide member in the form of at least one aperture such as a pair of apertures that extend longitudinally through the guide housing **460** and define second track portions **462**. The second track portions **462** are sized to receive the guide posts **454**. The proximal end of the guide housing **460** can define a pair of recesses **464** that extend longitudinally into, but not through, the guide housing **460** at a location adjacent the second track portions **462**. The recesses **464** can be arcuate shaped or alternatively shaped as desired.

Referring now to FIGS. **23**A and **23**F, a distal biasing force can be applied to the plunger **316**, which causes the plunger **316** and the push rod **330** to translate distally along the first stroke with respect to the casing **308** and thus the cannula **310** and the guide housing **460**. The plunger **316** translates from the first position illustrated in FIG. **23**A to the second position illustrated in FIG. **23**F. As the plunger **316** translates distally from the first position to the second position, the first guide pin **448** translates distally along the first track portion **446***a* of the first guide track **446** until the first guide pin **448** is aligned with the intermediate track portion **446***b* of the first guide track **446**. Likewise, as the plunger **316** translates distally from the first position to the second position, the second guide pin **461** translates distally in the first track portion **450***a* of the second guide track **450** until the second guide pin **461** is aligned with the intermediate track portion **450***b* of the second guide track **450**. Once the plunger **316** has translated to the second position, the guide posts **454** are circumferentially offset from the respective second track portions **462**, and abut the guide housing **460**, for instance in the recesses **464**.

Referring now to FIG. **23**G, the plunger **316** can be rotated along the direction of Arrow **456**, which causes the first and second guide pins **448** and **461** to travel in the respective intermediate track portions **446***b* and **450***b*, until reaching the end of the intermediate track portions **446***b* and **450***b*, which define respective stops that prevent the plunger **316** from continuing to rotate relative to the casing **308**, and further prevents the guide posts **454** from rotating relative to the guide housing **460**. Once the plunger **316** has finished rotating, the guide posts **454** are aligned with the second track portions **462**. Accordingly, as illustrated in FIG. **23**H, the plunger **316** can be further translated distally along the second stroke from the second position to a third position, at which point the plunger **316** abuts the guide housing **460** and is prevented from traveling distally further. Thus, the guide housing **460** defines a stop that prevents the plunger **316** from translating distally beyond the third position.

As the plunger **316** translates along the second stroke, the push rod **330** translates distally within the channel **312** of the cannula **310**, and ejects the first anchor body **28***a* out the ejection port **442**. After each anchor body **28***a* and **28***b* has been ejected from the instrument to a location behind the anatomical structure **24** (see FIG. **1**A), an actuation force can be applied to each anchor body **28***a* and **28***b*. For instance, the insertion instrument **330** can include a retention assembly of the type described above, such as the retention assembly **390** or any suitable alternatively constructed retention assembly. Alternatively, the user can manually apply the actuation force to the respective actuation strands **131***a* and **131***b*. A connector member can then attach the actuation strands **131***a* and **131***b* together in the manner described above.

Referring now to FIGS. **24**A-**25**D generally, it should be appreciated that an insertion instrument can be configured having a first and second cannulas supported by the casing in a side-by-side orientation that retain first and second anchor bodies, and first and second pusher assemblies operatively associated with the first and second cannulas, respectively, so as to eject the first and second anchor bodies out the respective first and second cannulas. It can be desirable to ensure that a desired cannula from which the anchor body is to be ejected is distally disposed with respect to the other cannula, such that the desired cannula can be inserted into the underlying tissue without also inserting the other cannula.

As illustrated in FIG. **24**A, an insertion instrument **300** includes a casing **308** that includes a body portion **308***a* and a handle portion **308***b* that extends out from the body portion **308***a*. The insertion instrument **300** further includes a first cannula **310***a* that extends distally from the casing **308**, and in particular from the body portion **308***a*, and a second cannula **310***b* that extends distally from the casing **308**, and in particular from the body portion **308***a*, at a location adjacent the first cannula **310***a*. The first and second cannulas **310***a* and **310***b* can extend substantially parallel to each other as illustrated. Accordingly, the first and second cannulas **310***a* and **310***b* can be described as being in a side-by-side relationship. The first and second cannulas **310***a* and **310***b* can define respective longitudinally elongate channels **312***a* and **312***b* that retain respective first and second anchor bodies **28***a* and **28***b*.

The insertion instrument **300** can further include first and second pusher assemblies **317***a* and **317***b* operatively associated with the first and second cannulas **310***a* and **310***b*, respectively. Thus, the first pusher assembly **317***a* is configured to eject the first anchor body **28***a* out the first cannula **310***a*, and the second pusher assembly **317***b* is configured to eject the second anchor body **28***b* out the second cannula **310***b*. The first and second cannulas **310***a* and **310***b* can define respective first and second tapered tips **311***a* and **311***b*, and first and second distal ejection ports that extend longitudinally through the respective tips **311***a* and **311***b*.

Each of the first and second pusher assemblies **317***a* and **317***b* includes first and second plungers **316***a* and **316***b*, respectively, and first and second pusher rods **330***a* and **330***b*, respectively, that extend distally from the corresponding plungers **316***a* and **316***b*. Each of the plungers **316***a* and **316***b* define respective shaft portions **430***a* and **430***b* and respective end caps that can define first and second grip portion **432***a* and **432***b* that extends radially out from the proximal end of the corresponding shaft portions **430** and **430***b*. When the first and second plungers **316***a* and **316***b* are in their respective first positions, the first and second grip portions **432***a* and **432***b* are proximally spaced from the casing **308**. The insertion instrument **300** can further include first and second lock-out tabs **468***a* and **468***b* that are removably attached to the first and second plungers **316***a* and **316***b*. For instance, in accordance with the illustrated embodiment, the first and second lock-out tabs **468***a* and **468***b* are attached to the respective first and second shaft portions **430***a* and **430***b* at a location longitudinally between the corresponding grip portions **432***a* and **432***b* and the casing **308**. Accordingly, the first and second lock-out tabs **468***a* and **468***b* interfere with the respective grip portions **432***a* and **432***b*, and prevent the plungers **316** from translating distally relative to the casing **308** to a depth that would eject the respective first and second anchor bodies **28***a* and **28***b*.

The insertion instrument **330** can further include a swap actuator **470** in the form of a trigger that extends partially into the casing **308**, and can extend out from the handle portion **308***b*. The swap actuator **470** is configured to be moved from a first position to an actuated position so as to reverse a relative position of the fist and second tips **311***a* and **311***b*. The swap actuator **470** can be coupled to the first pusher assembly **317***a*, such that proximal translation of the actuator **470** causes the first pusher assembly **317***a*, including the first plunger **316***a* and the first cannula **310***a*, to translate proximally. As illustrated in FIG. **24**A, the first tip

311*a* of the first cannula **310***a* is disposed distally with respect to the second tip **311***b* of the second cannula **310***b*. Furthermore, the distal end of the second push rod **330***b* can extend slightly out from the respective second tip **311***b*, such that the longitudinal distance between the distal end of the second push rod **330***b* and the distal end of the first tip **311***a* defines an insertion depth into underlying tissue. Otherwise stated, the second push rod **330***b* can define a depth stop for insertion of the first tip **311***a* into underlying tissue. It should thus be appreciated that the first tip **311***a* can be injected into underlying tissue, for instance at the first target anatomical location **24***a* (see FIG. **1**A) without causing the second tip **311***b* to inject into the underlying tissue. As is described in more detail below, actuation of the swap actuator **470** from a first position to a second position causes the first tip **311***a* to move proximally with respect to the casing **308** and the second tip **311***b*, such that the second tip **311***b* can be injected into the underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**B) without causing the first tip **311***a* to inject into the underlying tissue.

During operation, referring to FIG. **24**B, the first lock-out tab **468***a* can be removed from the first plunger **316***a*, such that the first plunger **316***a* can travel distally with respect to the casing **308** from the first position illustrated in FIG. **24**A to a second position as illustrated in FIG. **24**C, whereby the first grip portion **432***a* abuts the casing **308**. Because the first push rod **330***a* is translatably fixed to the first plunger **316***a*, distal translation of the first plunger **316***a* causes the first push rod **330***a* to likewise translate in the first cannula **310***a*. The first push rod **330***a* abuts the first anchor body **28***a*, such that distal translation of the first push rod **330***a* ejects the first anchor body **28***a* out the first ejection port, for instance into the first target anatomical location.

Next, referring to FIG. **24**D, the second lock-out tab **468***b* can be removed from the second plunger **316***b*, as illustrated in FIG. **24**D. Referring to FIG. **24**E, the swap actuator **470** can be actuated, for instance can be moved proximally, to retract the first tip **311***a* proximally with respect to the second cannula **310***b* until the first tip **311***a* is disposed proximally with respect to the second tip **311***b*. Furthermore, the distal end of the first push rod **330***a* can extend slightly out from the respective first tip **311***a*, such that the longitudinal distance between the distal end of the first push rod **330***a* and the distal end of the second tip **311***b* defines an insertion depth of the second tip **311***b* into the underlying anatomical structure. Otherwise stated, the first push rod **330***a* can define a depth stop for insertion of the second tip **311***a* into underlying tissue. It should thus be appreciated that the second tip **311***b* can be injected into underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**A) without causing the first tip **311***a* to inject into the underlying tissue. In accordance with the illustrated embodiment, actuation of the swap actuator **470** further causes the first plunger **316***a* to translate proximally to the first position illustrated in FIG. **24**A.

Referring now to FIG. **24**F, the second plunger **316***b* can travel distally with respect to the casing **308** from the first position illustrated in FIG. **24**E to a second position as illustrated in FIG. **24**F whereby the second grip portion **432***b* abuts the casing **308**. Because the second push rod **330***b* is translatably fixed to the second plunger **316***b*, distal translation of the second plunger **316***b* causes the second push rod **330***b* to likewise translate in the second cannula **310***b*, thereby ejecting the second anchor body **28***b* out the second ejection port **442***b* and into the second target anatomical location.

Operation of the insertion instrument **300** illustrated in FIGS. **24**A-**25**D will now be further described with particular reference to FIGS. **25**A-D. In particular, the insertion instrument **300** includes at least one latch assembly such as a first latch assembly **305***a*, a second latch assembly **305***b*, and a third latch assembly **305***c*. The first latch assembly **305***a* is configured to lock the swap actuator **470** in its proximal position once it has been moved proximally from a first position illustrated in FIG. **24**D to a second recessed position illustrated in FIG. **24**E. For instance, the first latch assembly **305** can include a latch member **307** that is supported by the casing **308** extends proximally toward a proximal abutment surface **307***a* configured to abut the swap actuator **470** once the swap actuator **470** is in its second proximal position, thereby interfering with distal movement of the swap actuator **470** relative to the casing **308**. As the swap actuator **470** moves proximally, the latch member **307** can deflect inwardly away from the swap actuator **470** so as to allow proximal translation of the swap member **470** relative to the latch member **307**. Once the swap actuator **470** has been moved from its first initial position to its second proximal position relative to the casing **308**, the latch member **307** moves outward under its spring force such that the proximal abutment surface **307***a* abuts the swap actuator **470** and prevents the swap actuator **407** from moving distally from its second position with respect to the casing **308**.

The second latch assembly **305***b* includes a first latch member **347** carried by the swap actuator **470** and movable with the swap actuator **470**, and a second latch member **349** that is carried by the first plunger **316***a*, and is movable with the first plunger **316***a*. The first latch member **347** is attached to the first cannula **310***a*, such that the first latch member **347** causes the first cannula **310***a* to translate with the swap actuator **470**. The second latch member **349** includes a body **349***a*, a first attachment portion such as a hook at the distal end of the body **349***a*, and a second attachment portion such as an abutment surface at the proximal end of the body (the second latch member **349** can be constructed as the mirror image of the second latch member **353** of the third latch assembly **305***c* described below). Accordingly, as the first plunger **316***a* is translated from its first position illustrated in FIG. **24**A to its second position illustrated in FIG. **24**B, the hook deflects inwardly away from the first latch member and rides along and past the first latch member **347**. Once the first plunger **316***a* is in its second position illustrated in FIG. **24**B such that the first anchor body **28***a* has been ejected, the hook of the second latch member **349** moves outward under its spring force such that the hook is disposed distal of the first latch member **347**, and the abutment surface of the second latch member is disposed proximal of the first latch member **347**. Accordingly, the first latch member **347** is captured between the hook of the second latch member **349** and the abutment surface of the second latch member **349**. Thus, the first and second latch members **349** are coupled with respect to translation.

Accordingly, once the first anchor body **28***a* has been ejected from the first cannula **310***a*, the second latch member **349** is attached to the first latch member **347**, which translatably couples the first plunger **316***a* to the swap actuator **470** with respect to translation. Furthermore, because the first latch member **347** is carried by the swap actuator **470** and is further attached to the first cannula **310***a*, movement of the swap actuator **470** proximally causes both the first cannula **310***a* and the first plunger **316** to move proximally to a position whereby the first tip **311***a* and the first push rod **330***a* are disposed proximal with respect to the second tip

311*b*, while the first push rod **330***a* remains disposed distal of the first tip **311***a*. Furthermore, because the first plunger **316***a* is coupled to the swap actuator **470** with respect to relative translation both proximally and distally, and because the swap actuator **470** is coupled to the casing **308** with respect to at least proximal translation, the first plunger **316** is prevented from translating proximally with respect to the casing **308** once the first anchor body **28***a* has been ejected. The first push rod **330***a* can thus provide an insertion depth stop for the second tip **311***b* as described above.

The third latch assembly **305***c* includes a first latch member **351** carried by the casing **308**, and a second latch member **353** carried by the second plunger **316***b*. The second latch member **353** includes a body **353***a*, a first attachment portion **353***b* such as a hook at the distal end of the body **353***a*, and a second attachment portion **353***c* such as an abutment surface disposed at the proximal end of the body **353***a*. When the second plunger **316***b* is translated distally from its first position illustrated in FIG. **24**E to its second distal position illustrated in FIG. **24**F, for instance when ejecting the second anchor body **28***b*, the hook can deflect inwardly, away from the first latch member **351** and ride along and move past the first latch member **351**. Once the second plunger **316***b* is in its second position illustrated in FIG. **24**F such that the second anchor body **28***b* has been ejected, the hook of the second latch member **353** moves outwardly under its spring force at a location distal of the first latch member **351**, and the abutment surface of the second latch member **353** is disposed proximal of the first latch member **351**. The first latch member **351** is thus captured between the hook of the second latch member **353** and the abutment surface of the second latch member **353**. As a result, the second plunger **316***b* is prevented from moving proximally or distally with respect to the casing **308** once the second anchor body **28***b* has been ejected, and the blunt distal end of the second push rod **330***b* remains distal to the second tip **311***b*.

Once the anchor bodies **28***a* and **28***b* have been ejected, a tensile force can be applied to the actuation portions **131***a* and **131***b* (see FIG. **1**A) so as to expand the anchor bodies **28***a* and **28***b* in the manner described above. For instance, first and second tensioning strands **380***a* and **380***b* (see FIGS. **18**A-**18**B) can be attached between the respective actuation portions **131***a* and **131***b*, and the respective lock-out tabs **468***a* and **468***b*. Accordingly, after the lock-out tabs **468***a* and **468***b* have been removed from the respective plungers **316***a* and **316***b* and the respective first and second anchor bodies **28***a* and **28***b* have been ejected, proximal movement of the lock-out tabs **468***a* and **468***b* with respect to the anchor bodies **28***a* and **28***b* causes the tensile force to be applied to the corresponding tensioning strands **380***a* and **380***b*, which communicates the tensile force to the actuation portions **131***a* and **131***b* so as to expand the anchor bodies **28***a* and **28***b*. Alternatively, the tensioning strands **380***a* and **380***b* can be secured in the casing **308** in any manner described above.

Referring now to FIGS. **26**A-B, the insertion instrument **300** can include a retention assembly **490** constructed in accordance with an alternative embodiment that is configured to apply an actuation force to the first and second actuation strands **38***a* and **38***b* (see FIG. **1**A). For instance, the retention assembly **490** can retain the first and second actuation strands **38***a* and **38***b* directly. In accordance with the illustrated embodiment, the retention assembly **490** retains both the actuation portions **131***a* and **131***b* and the attachment portions **133***a* and **133***b* of the first and second anchor bodies **28***a* and **28***b*, respectively, for instance when the attachment portions **133***a* and **133***b* are not attached when loaded in the insertion instrument **300**. Alternatively, if the attachment portions **133***a* and **133***b* are pre-attached to each other when loaded in the insertion instrument **300**, the retention assembly can retain only the actuation portions **131***a* and **131***b*. Alternatively still, as described above, at least one tensioning strand can be stitched through the first and second actuation strands **38** and **38***b*, respectively, and can further be retained in the retention assembly **490**. Regardless of the configuration, the retention assembly can be configured to apply an actuation force to the actuation strands **38***a* and **38***b* that causes the respective anchor bodies **28***a* and **28***b* to move to their expanded configurations.

In accordance with the illustrated embodiment, the retention assembly **490** can be mounted to either or both of the cannulas, such as the first cannula **310***a* as shown in FIG. **26**A. The retention assembly **490** can include a first locking member such as a retention housing **492** that is mounted to the first cannula **310***a* and defines a lateral strand-receiving gap **493** extending therein. In particular, the retention housing includes a first or proximal housing portion **492***a* and a second or distal housing portion **492***b*, such that the gap **493** is disposed between the first and second housing portions **492***a* and **492***b*. The retention assembly **490** can further include a second locking member such as a pincher **494** that can be threadedly mounted to the retention housing **492**, for instance to the first housing portion **492***a* at a location is aligned with the gap **493**. Rotation of the pincher **494** relative to the retention housing **492** in a first direction causes the pincher **494** to translate into the gap **493** toward the second housing portion **492***b*. Rotation of the pincher **494** relative to the retention housing **492** in a second direction opposite the first direction causes the pincher **494** to translate out of the gap **493** and away from the second housing portion **492***b*.

Accordingly, during operation, one or more target strands **379**, such as the actuation strand or strands **38***a* and **38***b* or at least one tensioning strand can be loaded into the gap **493**, and the pincher **494** can be rotated in the first direction until the retention assembly **490** captures the target strands **379** between a distal end of the pincher **494** and the second housing portion **492***b*. Once the first and second anchor bodies **28***a* and **28***b* have been ejected into the respective first and second target anatomical locations (see FIG. **1**A), the insertion instrument can be translated proximally away from the anatomical location, thereby applying the actuation force, either directly or indirectly, to the first and second actuation strands **38***a* and **38***b*, thereby actuating the anchor bodies **28***a* and **28***b* to their expanded configurations. The pincer **494** can then be rotated along the second direction so as to increase the gap **493** until the insertion instrument **300** can be pulled free from the target strands **379**. Alternatively or additionally, for instance when the target strands **379** are provided as tensioning strands, the tensioning strands can be cut while captured in the retention assembly **490**. Because the cannulas **310***a* and **310***b* can define longitudinal slots that extend through one side of the cannulas **310***a* and **310***b*, the actuation strands **38***a* and **38***b* can be freed from the respective cannula, for instance out the longitudinal slot, when the corresponding anchor bodies **28***a* and **28***b* are ejected from the cannula.

Referring now to FIGS. **27**A-**28**B generally, the insertion instrument **300** can be configured having a first and second cannulas **310***a* and **310***b* supported by the casing **308** in a side-by-side orientation that retain first and second anchor bodies **28***a* and **28***b*, and first and second pusher assemblies **317***a* and **317***b* operatively associated with the first and second cannulas **310***a* and **310***b*, respectively, so as to eject the first and second anchor bodies **28***a* and **28***b* out the respective first and second cannulas **310***a* and **310***b*. Furthermore, as described above, it can be desirable to ensure that a desired cannula from which the anchor body is to be ejected is distally disposed with respect to the other cannula, such that the desired cannula can be inserted into the underlying tissue without also inserting the other cannula.

As illustrated in FIG. **27**A, the insertion instrument **300** includes a casing **308** that includes a body portion **308***a* and a handle portion **308***b* that extends out from the body portion **308***a*. The insertion instrument **300** further includes a first cannula **310***a* that extends distally from the casing **308**, and in particular from the body portion **308***a*, and a second cannula **310***b* that extends distally from the casing **308**, and in particular from the body portion **308***a*, at a location adjacent the first cannula **310***a*. The first and second cannulas **310***a* and **310***b* can extend substantially parallel to each other as illustrated. Accordingly, the first and second cannulas **310***a* and **310***b* can be described as being in a side-by-side relationship. The first and second cannulas **310***a* and **310***b* can define respective longitudinally elongate channels **312***a* and **312***b* that retain respective first and second anchor bodies **28***a* and **28***b*.

The insertion instrument **300** can further include first and second pusher assemblies **317***a* and **317***b* operatively associated with the first and second cannulas **310***a* and **310***b*, respectively. Thus, the first pusher assembly **317***a* is configured to eject the first anchor body **28***a* out the first cannula **310***a*, and the second pusher assembly **317***b* is configured to eject the second anchor body **28***b* out the second cannula **310***b*. The first and second cannulas **310***a* and **310***b* can define respective first and second tapered tips **311***a* and **311***b*, and first and second distal ejection ports **442***a* and **442***b* that extend longitudinally through the respective tips **311***a* and **311***b*.

Each of the first and second pusher assemblies **317***a* and **317***b* includes first and second plungers **316***a* and **316***b*, respectively, that extends out the casing **308**, such as the body portion **308***a* of the casing **308**. The first and second plungers **316***a* and **316***b* can extend proximally out the casing **308** as described above with respect to FIGS. **24**A-F, or can extend out the casing along a direction angularly offset with respect to the longitudinal direction L so as to present respective tabs **323***a* and **323***b* that project out the casing **308**. Each of the first and second pusher assemblies **317***a* and **317***b* can further include first and second pusher rods **330***a* and **330***b*, respectively, that extend distally from the corresponding plungers **316***a* and **316***b*. When the first and second plungers **316***a* and **316***b* are in their respective first positions (FIG. **27**A), the first and second anchor bodies **28***a* and **28***b* are disposed in the respective cannulas **310***a* and **310***b*. The plungers **316***a* and **316***b* can be moved to respective second positions (FIG. **27**D) so as to eject the respective first and second anchor bodies **28***a* and **28***b* out the respective cannulas **310***a* and **310***b*.

The insertion instrument **330** can further include a swap actuator **470** that can include a swap tab **470***a* that extends out from the casing **308**, and can extend out from the body portion **308***a* at a location between the first and second tabs **323***a* and **323***b*. The casing **308** can defines slots **367***a-c* that extend through the upper end of the body portion **308** and are longitudinally elongate, and positioned such that the first and second tabs **323***a* and **323***b* extend out the first and second slots **367***a* and **367***b*, and the swap tab **470***a* extends out the third slot **367***c* at a location between the first and second tabs **323***a* and **323***b*. The slots **367***a-c* can thus provide tracks that define the longitudinal movement of the first and second pusher assemblies **317***a* and **317***b* and the swap actuator **470** as the tabs **323***a-b* and **470***a* ride in the respective slots **367***a-c*. The swap actuator **470** is configured to be moved from a first position to an actuated position so as to reverse a relative position of the fist and second tips **311***a* and **311***b*. For instance, as illustrated in FIG. **27**A, the first tip **311***a* of the first cannula **310***a* is disposed distally with respect to the second tip **311***b* of the second cannula **310***b*. It should thus be appreciated that the first tip **311***a* can be injected into underlying tissue, for instance at the first target anatomical location **24***a* (see FIG. **1**A) without causing the second tip **311***b* to inject into the underlying tissue. As is described in more detail below, actuation of the swap actuator **470** from a first position (FIG. **27**A) to a second position along the direction of Arrow **355** (FIG. **27**C) causes the second tip **311***b* to move distally with respect to the first tip **311***a*, such that the second tip **311***b* can be injected into the underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**B) without causing the first tip **311***a* to inject into the underlying tissue.

During operation, referring to FIGS. **27**A-B, the first plunger **316***a* can be translated distally along the direction of Arrow **357** from the first position to the second position, which causes the first push rod **330***a* to likewise translate distally in the first cannula **310***a*. The first push rod **330***a* abuts the first anchor body **28***a*, such that the first push rod **330***a* ejects the first anchor body **28***a* out the first cannula **310***a*, for instance into the first target anatomical location, as the first push rod **300***a* translates distally to the second position. The first plunger tab **323***a* abuts the casing **308** at the distal end of the first slot **367***a* when the first pusher assembly **317***a* is in the second position, whereby the first anchor body **28***a* has been ejected. Thus, when the first plunger tab **323***a* is in the second position, the plunger **316***a* is prevented from further distal translation. Thus, the user is provided with tactile feedback that the first anchor body **28***a* has been ejected.

Next, referring to FIG. **27**C, the swap actuator **470** can be actuated, for instance can be moved distally along the direction of Arrow **355**, from the first position to the actuated position, which causes the second tip **311***b* to advance, or translate distally, with respect to the casing **308** and the first cannula **310***a* until the second tip **311***b* is disposed distally with respect to the first tip **311***a*. It should thus be appreciated that the second tip **311***b* can be injected into underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**A) without causing the first tip **311***a* to inject into the underlying tissue. For instance, the distal end of the first push rod **330***a*, which is disposed distal with respect to the first tip **311***a*, can provide a depth stop for the insertion of the second tip **311***b* into the second target anatomical location. Thus, the second tip **311***b* can be injected until the first push rod **330***a* abuts the anatomical structure. In accordance with the illustrated embodiment, actuation of the swap actuator **470** further causes the second plunger **316***b*, and thus the second push rod **330***b*, to translate distally as illustrated in FIG. **27**C. The swap tab **470***a* abuts the casing **308** at the distal end of the third slot **367***c* once the swap actuator **470** has been moved to the actuated position, such that the swap actuator **470** is prevented from further distal translation. Thus, the user is provided with tactile feedback that the swap actuator **470** has been actuated.

Referring now to FIG. **27**D, the second plunger **316***b* can be translated distally along the direction of Arrow **359** from the first position to the second position, which causes the second push rod **330***b* to likewise translate distally in the second cannula **310***b*. The second push rod **330***b* abuts the second anchor body **28***b*, such that the second push rod **330***b* ejects the second anchor body **28***b* out the second cannula **330***b*, for instance into the second target anatomical location, as the second push rod **300***b* translates distally to the second position. The second plunger tab **323***b* abuts the casing **308** at the distal end of the second slot **367***b* when the second pusher assembly **317***b* is in the second position, whereby the second anchor body **28***b* has been ejected. Thus, when the plunger tab **323***b* is in the second position, the plunger **316***b* is prevented from further distal translation. Thus, the user is provided with tactile feedback that the second anchor body **28***b* has been ejected.

Operation of the insertion instrument **300** illustrated in FIGS. **27**A-**28**B will now be further described with particular reference to FIGS. **28**A-B. In particular, the insertion instrument **300** includes at least one latch assembly such as a first latch assembly **482**, a second latch assembly **484**, and a third latch assembly **486**. The first latch assembly **482** is configured to lock the swap actuator **470** in its distal position once it has been moved distally from a first position illustrated in FIG. **27**B to a second recessed position illustrated in FIG. **27**C. For instance, the first latch assembly **482** can include a latch member **488** that is supported by the casing **308** and configured to latch onto the swap actuator **470** so as to be coupled to the swap actuator **470** with respect to translation. The latch member **488** defines a body **488***a*, a first attachment portion **488***b* in the form of a hook carried by the body **488***a*, and a second attachment portion **488***c* in the form of an abutment surface carried by the body **488***a* disposed distal of the first attachment portion **488***b*. As the swap actuator **470** moves distally, the first attachment portion **488***a* can deflect inwardly away from the swap actuator **470** so as to allow distal translation of the swap member **470** relative to the latch member **488**, such as an outwardly projecting tab **470***a* of the swap actuator **470**. Once the swap actuator **470** has been moved from its first initial position to its second distal position relative to the casing **308**, the swap actuator **470** contacts the abutment surface and the hook can deflect outward under the spring force of the body **488***a*, such that the swap actuator **470**, for instance the tab **470***a*, becomes captured between the first and second attachment portions **488***b* and **488***c*. Accordingly, the latch member **488** prevents the swap actuator **470** from moving proximally and distally relative to the casing once the swap actuator **470** has been moved to its proximal position that advances the second pusher assembly **317***b* distally with respect to the first pusher assembly **316***a*.

The insertion instrument **300** can further include at least one first guide member **483***a* such as a guide wire that is translatably fixed to the casing **308**. For instance, the insertion instrument **300** can include a mount **485** that is supported by the casing **308** and is attached to the first guide member **483***a*. The first guide member **483** can extend through the swap actuator **470** so as to guide the swap actuator to translate distally.

The second latch assembly **484** is configured to lock the first plunger **316***a*, and thus the first pusher assembly **317***a*, in its proximal position proximal position once it has been moved distally from a first position illustrated in FIG. **27**A to a second distal position illustrated in FIG. **27**B that causes the first push rod **330***a* to eject the first anchor body **28***a*. For instance, the second latch assembly **484** can include a latch member **489** that is supported by the casing **308** and configured to latch onto the first plunger **316***a* so as to be coupled to the first plunger **316***a* with respect to translation. The second latch member **489** can be constructed substantially identically with respect to the first latch member **488**, and thus defines a body, a first attachment portion in the form of a hook carried by the body, and a second attachment portion in the form of an abutment surface carried by the body and disposed distal of the hook. As the first plunger **316***a* moves distally, the first attachment portion can deflect inwardly away from the first plunger **316***a* so as to allow distal translation of the first plunger **316***a* relative to the second latch member **489**, such as an outwardly projecting tab **316***c* of the first plunger **316***a*. Once the first plunger **316***a* has been moved from its first initial position to its second distal position relative to the casing **308**, the first plunger **316***a* contacts the abutment surface and the hook can deflect outward under the spring force of the body of the latch member **489**, such that the first plunger **316***a*, for instance the tab **316***c*, becomes captured between the first and second attachment portions of the latch member **489**. Accordingly, the latch member **489** prevents the first plunger **316***a* from moving proximally and distally relative to the casing **308** once the first plunger **316** has been moved to its distal position that ejects the first anchor body **28***a* from the first cannula **310***a*.

The insertion instrument **300** can further include at least one second guide member **483***b* such as a guide wire that is translatably fixed to the casing **308**. For instance, the mount **485** can be attached to the second guide member **483***b*, which can extend distally through the first plunger **316***a* so as to guide the first plunger **316***a* to translate distally.

The third latch assembly **486** is configured to lock the second plunger **316***b*, and thus the second pusher assembly **317***b*, in its distal position proximal position once it has been moved distally from a first position illustrated in FIG. **27**C to a second distal position illustrated in FIG. **27**D that causes the second push rod **330***b* to eject the second anchor body **28***b*. For instance, the third latch assembly **486** can include a third latch member **495** that is supported by the casing **308** and configured to latch onto the second plunger **316***b* so as to be coupled to the second plunger **316***b* with respect to translation. The third latch member **495** can be constructed substantially identically with respect to the first and second latch members **488** and **489**, and thus defines a body **495***a*, a first attachment portion **495***b* in the form of a hook carried by the body **495***a*, and a second attachment portion **495***c* in the form of an abutment surface carried by the body **495***a* at a location distal of the hook. As the second plunger **316***b* moves distally, the first attachment portion **495***b* can deflect inwardly away from the second plunger **316***b* so as to allow proximal translation of the second plunger **316***b* relative to the third latch member **495**, such as an outwardly projecting tab **316***d* of the second plunger **316***b*. Once the second plunger **316***b* has been moved from its first initial position to its second proximal position relative to the casing **308**, the second plunger **316***b*, for instance at the tab **316***d*, contacts the abutment surface **495***c* and the hook **495***b* can deflect outward under the spring force of the latch member body **495***a*, such that the second plunger **316***b* becomes captured between the first and second attachment portions of the latch member **495**. Accordingly, the latch member **495** prevents the second plunger **316***b* from moving proximally and distally relative to the casing **308** once the second plunger **316***b* has been moved to its distal position that ejects the second anchor body **28***b* from the second cannula **310***b*.

The insertion instrument **300** can further include at least one third guide member **483***c* such as a guide wire that is translatably fixed to the casing **308**. For instance, the mount **485** can be attached to the third guide member **483***c*, which can extend distally through the second plunger **316***b* so as to guide the second plunger **316***b* to translate distally. Furthermore, the insertion instrument **300** can include an attachment member **496** in the form of an attachment wire that attaches the second plunger **316***b* to the swap actuator **470** with respect to distal translation of the swap actuator **470**. For instance, distal translation of the swap actuator **470** causes the second plunger **316***b* to translate distally along with the swap actuator **470**. A distal force applied to the second plunger **316***b* can allow the second plunger **316***b* to translate distally relative to the swap actuator **470**. In accordance with one embodiment, the attachment member **496** can be translatably fixed to the swap actuator **470**, and can be attached to the second plunger **316***b* so that it interferes with the second plunger **316** with respect to proximal movement **316***b* of the second plunger **316***b* relative to the attachment member **493**. The swap actuator **470** can include a second tab **470***b* that is attached to the second cannula **310***b* with respect to translation, such that distal translation of the swap actuator **470** causes the second cannula **310***b* to translate distally along with the swap actuator **470**. Accordingly, distal translation of the swap actuator **470** causes the attachment member **496** to drag the second plunger **316***b*, the second cannula **310***b*, and the second push rod **330***b* distally until the second tip **311***b* is disposed distal of the first tip **311***a*. Because the first pusher rod **330***a* remains disposed distal of the first tip **311***a* after the first anchor body **28***a* has been ejected, the distal end of the first pusher rod **330***a* can define an insertion depth stop for the second tip **311***b* in the manner described above.

The attachment member **496** can extend at least partially through the second plunger **496***b* so as to allow the second plunger **496***b* to translate distally with respect to the attachment member **496** and therefore also with respect to the swap actuator **470**. As a result, once the swap actuator **470** has been translated distally, thereby also translating the second cannula **310***b* and the second pusher assembly **317***b* distally, translation of the second plunger **316***b* causes the second push rod **330***b* to eject the second anchor body **28***b* from the second cannula **310***b* in the manner described above.

Referring now to FIGS. **29**A-**29**G generally, the insertion instrument **300** can be configured having a first and second cannulas **310***a* and **310***b* supported by the casing **308** in a side-by-side orientation that retain first and second anchor bodies **28***a* and **28***b*, and first and second pusher assemblies **317***a* and **317***b* operatively associated with the first and second cannulas **310***a* and **310***b*, respectively, so as to eject the first and second anchor bodies **28***a* and **28***b* out the respective first and second cannulas **310***a* and **310***b*. Furthermore, as described above, it can be desirable to ensure that a desired cannula from which the anchor body is to be ejected is distally disposed with respect to the other cannula, such that the desired cannula can be inserted into the underlying tissue without also inserting the other cannula.

As illustrated in FIG. **29**A, the insertion instrument **300** includes a casing **308** that includes a first casing portion **308***a* and a second casing portion **308***b* that is disposed adjacent the first casing portion **308***b*. The insertion instrument **300** further includes a first cannula **310***a* that extends distally from the first casing portion **308***a*, and a second cannula **310***b* that extends distally from the second casing portion **308***b*. The first and second casing portions **308***a* and **308***b* can extend substantially parallel to each other as illustrated. Accordingly, the first and second cannulas **310***a* and **310***b* can be described as being in a side-by-side relationship. The first and second cannulas **310***a* and **310***b* can define respective longitudinally elongate channels that retain respective first and second anchor bodies **28***a* and **28***b* in the manner described above. The first and second cannulas **310***a* and **310***b* can further include longitudinally elongate side slots **337***a* and **337***b*, respectively, that extend into one side of the cannulas and are in communication with the respective elongate channels. Accordingly, the attachment portions **133***a-b* of the actuation strands **38***a* and **38***b* can extend out the respective side slots **337***a* and **337***b* and attach to each other (see FIG. **1**A) when the first and second anchor bodies **28***a* and **28***b* are loaded in the respective first and second cannulas **310***a* and **310***b*.

The insertion instrument **300** can further include first and second pusher assemblies **317***a* and **317***b* operatively associated with the first and second cannulas **310***a* and **310***b*, respectively. Thus, the first pusher assembly **317***a* is configured to eject the first anchor body **28***a* out the first cannula **310***a*, and the second pusher assembly **317***b* is configured to eject the second anchor body **28***b* out the second cannula **310***b*. The first and second cannulas **310***a* and **310***b* can define respective first and second tapered tips **311***a* and **311***b*, and first and second distal ejection ports that extend longitudinally through the respective tips **311***a* and **311***b*.

Each of the first and second pusher assemblies **317***a* and **317***b* includes first and second plungers **316***a* and **316***b*, respectively, that are disposed outside the respective first and second casing portions **308***a* and **308***b* at a location proximal with respect to the casing portions **308***a* and **308***b* as illustrated. Each of the first and second pusher assemblies **317***a* and **317***b* can further include first and second pusher rods **330***a* and **330***b*, respectively, that extend distally from the corresponding plungers **316***a* and **316***b*, through the respective first and second casing portions **308***a* and **308***b*, and into the respective first and second cannulas **310***a* and **310***b*. When the first and second plungers **316***a* and **316***b* are in their respective first positions (FIG. **29**A), the first and second anchor bodies **28***a* and **28***b* are disposed in the respective cannulas **310***a* and **310***b*. The plungers **316***a* and **316***b* can be moved to respective second positions (FIG. **29**F) so as to eject the respective first and second anchor bodies **28***a* and **28***b* out the respective cannulas **310***a* and **310***b*.

The insertion instrument **330** can further include a swap actuator **470** that can include a swap button **470***a* that extends laterally through the first casing portion **308***a* and into the second casing portion **308***b*. The swap actuator **470** is configured to selectively couple and decouple the first and second casing portions with respect to relative translation in the longitudinal direction L. For instance, as illustrated in FIGS. **29**B and **29**G, the first and second casing portions **308***a* and **308***b* can be slidably coupled along the longitudinal direction. For instance, one of the casing portions, such as the first casing portion **308***a*, can define a slot **375** extending along at least a portion of its longitudinal length. The other casing portion, such as the second casing portion **308***b*, can include a slider member such as a projection **377** that is configured to ride inside the slot so as to guide longitudinal movement of the first and second casing portions **308***a* and **308***b* relative to each other. The slot **375** and the projection **377** can flare angularly outward in a dovetail arrangement such that the first and second casing portions **308***a* and **308***b* are prevented from separating along a direction angularly offset from the longitudinal direction L. The swap actuator **470** is configured to move the first and second casing portions **308***a* and **308***b* relative to each other along the longitudinal direction such that the respective tips **311***a* and **311***b* move from a first relative position to a second relative position that is opposite the first relative position.

For instance, as illustrated in FIG. **29**A, the first tip **311***a* of the first cannula **310***a* can be initially disposed distally with respect to the second tip **311***b* of the second cannula **310***b*. It should thus be appreciated that the first tip **311***a* can be injected into underlying tissue, for instance at the first target anatomical location **24***a* (see FIG. **1**A) without causing the second tip **311***b* to inject into the underlying tissue. As is described in more detail below, actuation of the swap actuator **470** from a first position (FIG. **29**D) to a second position causes the second tip **311***b* to move distally with respect to the first tip **311***a* such that the second tip **311***b* is positioned distal of the first tip **311***a*. Accordingly, the second tip **311***b* can be injected into the underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**B) without causing the first tip **311***a* to inject into the underlying tissue.

During operation, referring to FIG. **29**C, the first plunger **316***a* can be translated distally from the first position to the second position, which causes the first push rod **330***a* to likewise translate distally in the first cannula **310***a*. The first push rod **330***a* abuts the first anchor body **28***a*, such that the first push rod **330***a* ejects the first anchor body **28***a* out the first cannula **310***a*, for instance into the first target anatomical location, as the first push rod **300***a* translates distally to the second position. The first plunger **316***a* can abuts the first casing portion **308***a* when the first pusher assembly **317***a* is in the second position, whereby the first anchor body **28***a* has been ejected. Thus, when the first plunger **316***a* is in the second position, the first plunger **316***a* is prevented from further distal translation. Thus, the user is provided with tactile feedback that the first anchor body **28***a* has been ejected.

Next, referring to FIGS. **29**C, **29**D, and **29**G, the swap actuator **470** can be actuated so as to reverse the relative position of the first and second tips **311***a* and **311***b* in the manner described above. For instance, the swap actuator **470** can include a button **472** that extends laterally through the first casing portion **308***a* and into the second casing portion **308***a*. The second casing portion **308***b* can include a spring member **474** that biases the button **472** outward toward its first position. The button **472** can include at least one flange **476** that abuts a wall of the second casing portion **308***b* so as to prevent the force of the spring member **474** from ejecting the button **472** out the first casing portion **308***a*.

The first casing portion **308***a* can include a pair of apertures **478***a-b* sized to receive the button **472** such that the button **472** extends out the first casing portion **308***a*. The first aperture **478***a* is disposed proximal with respect to the second aperture **478***b*. When the button **472** extends through the first aperture **478***a*, the first tip **311***a* is disposed distal with respect to the second tip **311***b*. Furthermore, interference between the button **472** and the first casing portion **308***a* prevents the first casing portion **308***a* from translating longitudinally relative to the second casing portion **308***b*. When the button **472** is depressed into the slot **375**, and thus into the projection **377**, interference between the button **472** and the first casing portion **308***a* is removed, such that the first and second casing portions **308***a* and **308***b* are configured to translate longitudinally relative to each other. For instance, the second casing portion **308***b*, and thus the second cannula **310***b*, can slide distally with respect to the first casing portion **308***a*, and thus the first cannula **310***a*, until the button **472** is driven through the second aperture **478***b* as illustrated in FIG. **29**D. When the button **472** extends through the second aperture **478***b*, the second tip **311***b* is disposed distal with respect to the first tip **311***a*. It should thus be appreciated that the second tip **311***b* can be injected into underlying tissue, for instance at the second target anatomical location **24***b* (see FIG. **1**A) without causing the first tip **311***a* to inject into the underlying tissue.

Referring now to FIGS. **29**D-E, the insertion instrument **300** can further include a lock-out tab **468** that is removably attached to the second push rod **330***b* at a location longitudinally between the corresponding plunger **316***b* and the second casing portion **308***b*. Accordingly, the lock-out tab **468** interferes with the distal translation of the plunger **316***b* relative to the second casing portion **308***b* to a depth that would eject the respective second anchor body **28***b*. The lock-out tab **468** can remain attached to the second push rod **330***b* until the first anchor body **28***a* has been ejected and the swap actuator **470** has been actuated. The insertion instrument **300** can further include a lock-out tab operatively associated with the first pusher assembly **317** in the manner described with respect to the second pusher assembly **317***b*.

Referring now to FIGS. **29**E-F, once the lock-out tab **468** has been removed from the second push rod **430**, the second plunger **316***b* can be translated distally from the first position to the second position, which causes the second push rod **330***b* to likewise translate distally in the second cannula **310***b*. The second push rod **330***b* abuts the second anchor body **28***b*, such that the second push rod **330***b* ejects the second anchor body **28***b* out the second cannula **330***b*, for instance into the second target anatomical location, as the second push rod **300***b* translates distally to the second position. The grip portion **432***b* of the second plunger **416***b* abuts the casing **308** at the distal end after the second anchor body **28***b* has been ejected, thereby providing the user with tactile feedback that the second anchor body **28***b* has been ejected.

Referring now to FIGS. **30**A-D generally, the insertion instrument **300** can be configured having a first and second cannulas **310***a* and **310***b* supported by the casing **308** in a side-by-side orientation that retain first and second anchor bodies, respectively. Each of the first and second cannulas **310***a* and **310***b* is supported by the casing **308** so as to be translatably movable with respect to the casing **308**. The insertion instrument **300** further includes a reciprocal motion assembly **500** that is configured to drive the first and second cannulas **310***a* and **310***b* in opposite directions. For instance, when the first cannula **310***a* is driven distally with respect to the casing **308**, the reciprocal motion assembly **500** drives the second cannula **310***b* proximally with respect to the casing **308**. Similarly, when the first cannula **310***a* is driven proximally with respect to the casing **308**, the reciprocal motion assembly **500** drives the second cannula **310***b* distally with respect to the casing **308**. Similarly, when the second cannula **310***b* is driven distally with respect to the casing **308**, the reciprocal motion assembly **500** drives the first cannula **310***a* proximally with respect to the casing **308**. Similarly, when the second cannula **310***b* is driven proximally with respect to the casing **308**, the reciprocal motion assembly **500** drives the first cannula **310***a* distally with respect to the casing **308**.

The insertion instrument **300** can include a pusher assembly **317** having a plunger **316** and first and second pusher members **330***a* and **330***b*. The first pusher member **330***a* extends into the first cannula **330***a* and is configured to eject a first anchor body out the first cannula **330***a* in the manner described above. Similarly, the second pusher member **330***b* extends into the second cannula **330***b* and is configured to eject a second anchor body **28***b* out the second cannula **330***b* in the manner described above. The insertion instrument further can include a selective plunger engagement assembly **502** that is operable so as to selectively engage the plunger between one of the first and second push rods **330**_a_ and **330**_b_. Thus, the plunger **316** can be translatably coupled to the first push rod **330**_a_, such that distal translation of the plunger **316** causes the push rod **330**_a_ to translate distally and eject the first anchor body **28**_a_ out of the respective first cannula **330**_a_. The plunger **316** can be translatably coupled to the second push rod **330**_b_, such that distal translation of the plunger **316** causes the push rod **330**_b_ to translate distally and eject the second anchor body **28**_b_ out of the respective first cannula **330**_b_.

Referring now to FIGS. **30**A-C, the reciprocal motion assembly **500** includes a first force transfer member, such as a toothed first rack **504**_a_ that is attached to the first cannula **310**_a_ and is translatably fixed to the first cannula **310**_a_. The first rack **504**_a_ can be integral with the first cannula **310**_a_ or discretely attached to the first cannula **310**_a_ as desired. In accordance with the illustrated embodiment, the first rack **504**_a_ extends proximally from the first cannula **310**_a_. The reciprocal motion assembly **500** can further include a second force transfer member such as a second toothed rack **504**_b_ that is attached to the second cannula **310**_b_ and is translatably fixed to the second cannula **310**_b_. The second rack **504**_b_ can be integral with the second cannula **310**_b_ or discretely attached to the second cannula **310**_b_ as desired. In accordance with the illustrated embodiment, the second rack **504**_b_ extends proximally from the second cannula **310**_b_.

The reciprocal motion assembly **500** can further include a third force transfer member such as a first gear **506**_a_, which can be a spur gear, that mates with the first rack such that rotation of the first gear **506**_a_ drives the first rack **504**_a_ to translate substantially linearly, for instance proximally or distally. The first cannula **310**_a_ translates along with the first rack **504**_a_. The reciprocal motion assembly **500** can further include a fourth force transfer member such as a second gear **506**_b_, which can be a spur gear, that mates with the second rack **504**_b_ such that rotation of the second gear **506**_b_ drives the first rack **504**_a_ to translate substantially linearly, for instance proximally or distally. The second cannula **310**_b_ translates along with the second rack **504**_b_. Furthermore, the first and second gears **506**_a_ and **506**_b_ are mated such that rotation of one of the first and second gears **506**_a_ and **506**_b_ in a first rotational direction along their respective axes of rotation **508**_a_ and **508**_b_ drives the other of the first and second gears **506**_a_ and **506**_b_ to rotate in a second rotational direction opposite the first rotational direction. The first and second gears **506**_a_ and **506**_b_ can be supported in the casing **308** such that the axes of rotation **508**_a_ and **508**_b_ remains stationary as the gears **506**_a_ and **506**_b_ rotate.

The second rack **504**_b_ can include a handle **508**_b_ that extends out the casing **308**. During operation, for instance when the first cannula **310**_a_ extends distal with respect to the second cannula **310**_b_, the handle **508**_b_ can be driven distally, which causes the second cannula **310**_b_ and the second rack **504**_b_ to translate distally, thereby rotating the second gear **506**_b_ along a direction of rotation. The second gear **506**_b_ drives the first gear **506**_a_ to rotate along an opposite direction of rotation, which causes the first cannula **310**_a_ to translate proximally toward the casing **308**. Thus, as the second cannula **310**_b_ is driven distally, the reciprocal motion assembly drives the first cannula **310** in an opposite direction, such as proximally as illustrated.

When the second cannula **310**_b_ extends distal with respect to the first cannula **310**_a_, the handle **508**_b_ can be driven proximally, which causes the second cannula **310**_b_ and the second rack **504**_b_ to translate proximally, thereby rotating the second gear **506**_b_ along a direction of rotation. The second gear **506**_b_ drives the first gear **506**_a_ to rotate along an opposite direction of rotation, which causes the first cannula **310**_a_ to translate distally away from the casing **308**. Thus, as the second cannula **310**_b_ is driven proximally, the reciprocal motion assembly drives the first cannula **310**_a_ in an opposite direction, such as distally as illustrated.

The handle **508**_b_ can include a hook **510** that latches onto the casing **308** so as to provide a safety catch that prevents distal translation of the handle **508**, and thus also distal translation of the second rack **504**_b_. The hook **510** can be configured to latch onto the casing **308** when the second cannula **310**_b_ is retracted, and the first cannula **310**_a_ is extended and disposed distal with respect to the second cannula **310**_b_.

Referring now to FIGS. **30**C-D, the selective plunger engagement assembly **502** includes a track **512** carried by the casing **308**. The track **512** can extend radially outward into an inner wall of the casing **308**. The track includes a first portion **512**_a_ that extends substantially longitudinally and parallel to the cannulas **310**_a_ and **310**_b_ and the push rods **330**_a_ and **330**_b_. The track further includes a second portion **512**_b_ that extends from the first portion **512**_a_, for instance from the proximal end of the first portion **512**_a_, and extends proximally and outward, such as laterally outward, from the first portion **512**_b_. Thus, it can be said that the second portion **512**_b_ is offset with respect to the first portion **512**_a_. In accordance with the illustrated embodiment, the second portion **512**_b_ is angularly offset with respect to the first portion **512**_a_.

The plunger **316** is configured to ride in the track **512**, and is movable distally along the track **512** so as to drive a select one of the first and second push rods **330**_a_ and **330**_b_ distally within a respective one of the first and second cannulas **310**_a_ and **310**_b_ so as to eject the respective one of the first and second anchors out the insertion instrument. In accordance with the illustrated embodiment, the first and second push rods **330**_a_ and **330**_b_ carry first and second engagement members **514**_a_ and **514**_b_. The engagement members **514**_a_ and **514**_b_ can be spaced from each other so as to provide clearance as the first and second cannulas **310**_a_ and **310**_b_ are driven reciprocally. It should be appreciated that because the first and second push rods **330**_a_ and **330**_b_ extend into the respective first and second cannulas **310**_a_ and **310**_b_, the push rods **330**_a_ and **330**_b_ are likewise driven reciprocally during reciprocal movement of the cannulas **310**_a_ and **310**_b_.

The plunger **316** carries a biasing member **516** that is longitudinally aligned with each of the engagement members **514**_a_ and **514**_b_ when the plunger **316** is disposed in the first track portion **512**_a_. The plunger **316** further carries a follower **518** that is sized and shaped so as to ride in the track **512** and guide the travel path of the plunger **316** as the plunger is driven proximally and distally. The plunger **316** can include a proximal end that extends out, for instance proximally out, from the casing **308**. Thus, the plunger **316** can be driven distally along the first track portion **512**_a_ and proximally along the first track portion **512**_a_. The plunger can further be driven proximally along the second track portion **512**_b_, which causes the biasing member **516** to move out of longitudinal alignment with the engagement members **514**_a_ and **514**_b_. Thus, the cannulas **310**_a_ and **310**_b_, and the respective push rods **330**_a_ and **330**_b_, can move reciprocally without the engagement members **514**_a_ and **514**_b_ interfering with each other, and further without the engagement members **514**_a_ and **514**_b_ interfering with the biasing member **516** of the plunger **316**.

When it is desired to eject one of the anchor bodies out of the respective cannula, for instance the first cannula **310**_a_, the first push rod **330**_a_ can be placed into alignment with the plunger **316**. For instance, the reciprocal motion assembly **500** can be actuated as desired so as to position the respective engagement member **514***a* distal of the proximal end of the first track portion **512***a*. Accordingly, the plunger **316** can be driven distally along the track **512**. Once the plunger **512** travels distally along the first track portion **512***a*, the biasing member **516** engages the engagement member **514***a*, and drives the push rod **330***a* distally in the respective cannula **310***a*, thereby ejecting the anchor body out the cannula **310***a* as described above.

Once it is desired to eject the second anchor body from the second cannula **310***b*, the plunger **316** can be driven proximally onto the second track portion **512***b* until the biasing member **516** is out of longitudinal alignment with the engagement members **514***a* and **514***b* of the first and second push rods **330***a* and **330***b*. Next, the reciprocal motion assembly **500** can be actuated so as to drive the second cannula **310***b* and second push rod **330***b* distally, which causes the first cannula **310***a* and the first push rod **330***a* to translate proximally, until the first engagement member **514***a* is disposed proximal of the proximal end of the first track portion **512***a*, and the second engagement member **514***b* is disposed distal of the proximal end of the first track portion **512***a*. Thus, the second cannula **310***b* is disposed distal with respect to the first cannula **310***a*. Next, the plunger **316** can be driven distally, which causes the biasing member **516** to engage the second engagement member **514***b*, which drives the second push rod **330***b* distally in the second cannula **330***b* so as to eject the second anchor out the insertion instrument.

Referring now to FIG. **31**, while various insertion instruments **300** have been described as including a distal ejection port **442**, the insertion instruments **300** can define a side ejection port **318** as an alternative to the distal ejection port **442**. For instance, the side ejection port **318** can be defined as a slot that extends radially through a distal portion of the cannula **310** at a location proximal with respect to the tip **311**. The tip **311** can be closed so as to prevent the anchor bodies **28***a* and **28***b* from ejecting out the distal ejection port **442** that is defined by the tip **311**. The side ejection port **318** can define a circumferential dimension at least substantially equal to or greater than the largest cross-sectional dimension of each of the first and second anchor bodies **28***a* and **28***b*, such that the anchor bodies **28***a* and **28***b* are sized to travel through the side ejection port **318**. Furthermore, the side ejection port **318** can define a longitudinal length that is substantially equal to or greater than the longitudinal length of each of the first and second anchor bodies **28***a* and **28***b*. The longitudinal length of the side ejection port **318** can be slightly less than that of each of the first and second anchor bodies **28***a* and **28***b*, for instance, if the first and second anchor bodies **28***a* and **28***b* are angularly offset with respect to the longitudinal axis **302** as they are ejected out the side ejection port **318**.

The tip **311** can define a ramp **372** at its proximal end. The ramp **372** can thus be disposed at the distal end of the side ejection port **318** and substantially aligned with the longitudinal axis **302**. The ramp **372** can define a tapered ejection surface **374** that is angled radially outward toward the side ejection port **318** as it extends distally. Accordingly, as the plug **314** biases the second anchor body **28***b* distally from the elongate opening **312** of the cannula **310** onto the ejection surface **374** as the plunger **316** and push tube **334** collar **332** move from the first position to the second position, second anchor body **28***b* rides along the ejection surface **374**, which directs the second anchor body **28***b* out the side ejection port **318** along the direction of Arrow B, thereby ejecting the second anchor body **28***b* out the insertion instrument **300** at the second target anatomical location **24***b* (see FIG. **1**A). When the at least the distal portion of the side ejection port **318** is disposed behind the anatomical structure **24**, the second anchor body **28***b* is ejected from the insertion instrument **300** at a location behind the anatomical structure **24**, as further shown in FIG. **1**A. The insertion instrument **300** can be configured such that the plug **314** is disposed proximal to and adjacent to the tip **311** when the push rod **330** and the push tube **334** become decoupled. Accordingly, translation of the push rod **330** relative to the push tube **334** causes the push rod to eject the first anchor **28***a* along the ramp surface **378** of the plug **314** in the manner described above, and out the side ejection port **318**.

The embodiments described in connection with the illustrated embodiments have been presented by way of illustration, and the present invention is therefore not intended to be limited to the disclosed embodiments. Furthermore, the various structures, features, and methodologies associated with any embodiment described herein can apply to any other embodiment as described herein, unless otherwise indicated. For instance, unless otherwise indicated, any insertion instrument described herein can include a retention assembly as described herein in accordance with any suitable alternative embodiment, a cutting assembly as described herein or in accordance with any suitable alternatively embodiment, a swap assembly of the type described herein or constructed in accordance with any suitable alternative embodiment, a reciprocal motion assembly of the type described herein or constructed in accordance with any suitable alternative embodiment, and a selective plunger engagement assembly of the type described herein or constructed in accordance with any suitable alternative embodiment. Accordingly, those skilled in the art will realize that the invention is intended to encompass all modifications and alternative arrangements included within the spirit and scope of the invention, for instance as set forth by the appended claims.

We claim:

1. An insertion instrument assembly configured to eject a first anchor and a second anchor at respective target locations, the first and second anchors including respective first and second anchor bodies that extend substantially along a respective direction of elongation, each of the first and second anchors further including a respective actuation member, the insertion instrument assembly comprising:

a casing;

a cannula fixed with respect to the casing, the cannula extending out relative to the casing in a distal direction along a cannula axis to a distal end of the cannula, the cannula defining an elongate opening that extends along the cannula axis;

a first pusher member aligned with the elongate opening of the cannula;

a second pusher member aligned with the elongate opening of the cannula so as to be movable within the cannula along the cannula axis, wherein 1) the second pusher member contains the first anchor body, 2) the elongate opening of the cannula contains the second anchor body and 3) the first pusher member is configured to be depressed in the elongate opening so as to eject the first and second anchor bodies from the cannula and into the respective target locations;

a coupling assembly that releasably translatably couples the first pusher member to the second pusher member, such that, in a first mode of operation the first and second pusher members are coupled together and translate together to eject the second anchor body from the cannula, and in a second mode of operation, the first and second pusher members are decoupled from each other so that the first pusher member is translatable with respect to the second pusher member to eject the first anchor body from the second pusher member and out the cannula; and

a plunger attached to the first pusher member, the plunger configured for rotational movement with respect to the casing so as to transition the coupling assembly from the first mode of operation to the second mode of operation so as to eject the first and second anchors from the cannula,

wherein, when a tensile force is applied to the respective actuation member substantially along the direction of elongation, the respective first and second anchor bodies expand along a respective second direction perpendicular with respect to the respective direction of elongation.

2. The insertion instrument assembly as recited in claim **1**, wherein the first pusher member is configured to brace against the first anchor body.

3. The insertion instrument assembly according to claim **1**, wherein the cannula defines a slot that receives the respective actuation member, such that the respective actuation member extends out the cannula.

4. The insertion instrument assembly according to claim **1**, wherein the first pusher member comprises a push rod that has an outer cross-sectional dimension which is smaller than that of the elongate opening of said cannula such that the respective actuation member extends through said elongate opening of said cannula alongside the push rod.

5. The insertion instrument assembly according to claim **1**, wherein said cannula has a conical inlet.

6. The insertion instrument assembly according to claim **1**, wherein the second anchor body is spaced from first anchor body along the distal direction.

7. The insertion instrument assembly according to claim **6**, wherein the distal end of the cannula defines a needle tip, and depressing the first pusher member causes at least one of the first and second anchor bodies to translate distally out the elongate opening along the distal direction.

8. The insertion instrument assembly according to claim **7**, wherein the needle tip is conical.

9. The insertion instrument assembly according to claim **6**, wherein the elongate opening terminates at an elongate opening distal end, and the cannula defines a side ejection portal in communication with the elongate opening distal end.

10. The insertion instrument assembly according to claim **9**, further comprising a tip that extends from the cannula along the distal direction.

11. The insertion instrument assembly according to claim **10**, wherein the tip is conical.

12. The insertion instrument assembly according to claim **11**, wherein the tip comprises a cone.

13. The insertion instrument assembly according to claim **6**, wherein the cannula defines a tapered distal end.

14. The insertion instrument assembly according to claim **6**, wherein the second pusher member defines a plug disposed between the first and second anchor bodies, and translation of the first and second pusher members a sufficient distance to eject the second anchor body causes the plug to translate to a location out the cannula.

15. The insertion instrument assembly according to claim **6**, wherein in the first mode of operation, the first pusher member is initially coupled to the second pusher member such that the first pusher member and the second pusher member translate in the distal direction in tandem during a first stroke of the first pusher member.

16. The insertion instrument assembly according to claim **15**, wherein the first stroke causes the second pusher member to eject the second anchor body out the cannula.

17. The insertion instrument assembly according to claim **16**, wherein in the second mode of operation, the first pusher member is decoupled from the second pusher member after the first stroke such that the first pusher member translates with respect to the second pusher member.

18. The insertion instrument assembly according to claim **15**, wherein a second stroke of the first pusher member ejects the first anchor body from the cannula.

19. The insertion instrument according to claim **18**, wherein the first and second pusher members are coupled so as to translate in tandem during a first portion of the second stroke.

20. The insertion instrument assembly according to claim **18**, further comprising a stop member that is translatably fixed with respect to the cannula, and a clip removably couples the first and second pusher members together.

21. The insertion instrument assembly according to claim **20**, wherein the plunger is translatably fixed to the first pusher member, the plunger configured to be depressed so as to depress the first pusher member in the elongate opening.

22. The insertion instrument assembly according to claim **20**, wherein the clip is removably attached to the plunger.

23. The insertion instrument assembly according to claim **22**, further comprising an attachment member that is translatably fixed to the second pusher member, wherein the clip abuts the attachment member.

24. The insertion instrument assembly according to claim **23**, wherein the plunger is depressed a first distance that causes the second anchor body to be ejected from the insertion instrument assembly, and the clip abuts the casing once the plunger has been depressed the first distance so as to prevent the plunger from being depressed a second distance greater than the first distance.

25. The insertion instrument assembly according to claim **24**, wherein removal of the clip from the plunger translatably decouples the first and second pusher members, such that depression of the plunger the second distance causes the first pusher member to eject the first anchor body from the insertion instrument assembly.

26. The insertion instrument assembly according to claim **1**, wherein the cannula defines a first longitudinal aperture and the first pusher member defines a second longitudinal aperture so that by rotating said first pusher member relative to said cannula said first and second longitudinal apertures can be aligned and said insertion instrument assembly can be released from said respective first and second anchor bodies.

27. The insertion instrument assembly according to claim **1**, further comprising complementary first and second guide members that are operably coupled between the casing and the second pusher member so as to guide relative movement between the casing and the second pusher member.

28. The insertion instrument assembly according to claim **27**, further comprising an attachment member that is supported by the second pusher member so as to be translatably fixed relative to the second pusher member.

29. The insertion instrument assembly according to claim **28**, wherein the plunger is translatably fixed to the first pusher member.

30. The insertion instrument assembly according to claim **29**, wherein the first and second guide members are operably coupled between the casing and the attachment member.

31. The insertion instrument assembly according to claim **29**, wherein the first and second guide members are configured to translatably couple the first pusher member to the second pusher member.

32. The insertion instrument assembly according to claim **31**, wherein the attachment member comprises a collar that extends about the plunger.

33. The insertion instrument assembly according to claim **29**, wherein the attachment member is translatably coupled to the plunger.

34. The insertion instrument assembly according to claim **28**, wherein the first and second guide members comprise a 1) guide track that extends into at least one of the attachment member and the casing, and 2) a guide pin that is coupled to the other of the attachment member and the casing, such that the guide pin rides in the guide track.

35. The insertion instrument assembly according to claim **34**, wherein the guide track extends into the attachment member and the guide pin extends from the casing into the guide track.

36. The insertion instrument assembly according to claim **35**, wherein the guide pin is translatably fixed to the casing.

37. The insertion instrument assembly according to claim **35**, wherein the guide track defines a first track portion and a second track portion that is offset with respect to the first track portion.

38. The insertion instrument assembly as recited in claim **37**, wherein rotation of the plunger causes the guide pin to ride from the first track portion to the second track portion.

39. The insertion instrument assembly as recited in claim **38**, wherein the attachment member defines a stop member at terminal ends of the first and second track portions.

40. The insertion instrument assembly as recited in claim **34**, wherein the guide pin translates proximally in the guide track as the plunger moves distally relative to the casing so as to eject the first and second anchor bodies from the insertion instrument assembly.

41. The insertion instrument assembly as recited in claim **34**, wherein the guide track defines a base having an edge, wherein the guide pin translates along the edge so as to provide at least one of tactile and audio feedback.

42. The insertion instrument assembly according to claim **28**, wherein the coupling assembly comprises a coupling member that is carried by the attachment member, the coupling member configured to translatably couple the attachment member relative to the first pusher member.

43. The insertion instrument assembly according to claim **42**, wherein the first pusher member defines a first recess, and the coupling member is configured to extend into the first recess so as to translatably couple the first and second pusher members during the first mode of operation.

44. The insertion instrument assembly according to claim **43**, wherein the complimentary first and second guide members define a first portion, a second portion that is offset from the first portion, and a stop at one end of the first portion.

45. The insertion instrument assembly according to claim **44**, wherein the coupling member is a latch, and the stop of the first portion prevents translation of the second pusher member relative to the first pusher member in the distal direction before the latch is aligned with the second recess.

46. The insertion instrument assembly according to claim **45**, wherein the first portion has a length sufficient such that movement of the second guide member along the first portion causes the second pusher member to eject the second anchor body from the insertion instrument.

47. The insertion instrument assembly according to claim **46**, wherein the casing carries a second recess that is spaced from the first recess, and wherein movement of the second guide member along the second portion causes the latch to move in alignment with the second recess.

48. The insertion instrument assembly according to claim **47**, wherein the latch moves into the second recess so as to translatably decouple the first and second pusher members in the second mode of operation, such that the first pusher member is translatable independently of the second pusher member so as to eject the first anchor body from the insertion instrument assembly.

49. The insertion instrument assembly as recited in claim **48**, wherein the cannula defines a distal ejection port, and the first and second anchor bodies are ejected from the instrument through the distal ejection port.

50. The insertion instrument assembly as recited in claim **47**, wherein the second pusher member comprises a plug that is disposed such that an ejection port of the cannula extends between the plug and the first pusher member when the latch is in alignment with the second recess, such that the first anchor body can be ejected from the insertion instrument assembly through the ejection port.

51. The insertion instrument assembly as recited in claim **47**, wherein when the coupling member moves to a location aligned with the second recess, the coupling member is driven out of the first recess and into the second recess, thereby translatably decoupling the second pusher member from the first pusher member.

52. The insertion instrument assembly according to claim **1**, wherein the coupling assembly fixes the first and second pusher members during a first stroke whereby the second anchor body is ejected from the cannula.

53. The insertion instrument assembly according to claim **52**, wherein the coupling assembly decouples the first and second pusher members from each other during a second stroke such that the first pusher member is translatable relative to the second pusher member, whereby the first pusher member ejects the first anchor body out the cannula.

54. The insertion instrument assembly according to claim **1**, further comprising an attachment member that is translatably fixed to the second pusher member.

55. The insertion instrument assembly according to claim **54**, wherein the plunger is translatably fixed to the first pusher member.

56. The insertion instrument assembly according to claim **55**, wherein the attachment member is releasably attached to the plunger during translation of the plunger with respect to the casing.

57. The insertion instrument assembly according to claim **56**, wherein the coupling assembly comprises a coupling member that is carried by the attachment member, wherein the coupling member is configured to a) extend into a first recess of the plunger so as to translatably couple the attachment member to the plunger prior to rotation of the plunger, and b) be removed from the first recess of the plunger after rotation of the plunger.

58. The insertion instrument assembly according to claim **57**, wherein the casing carries a second recess that is spaced from the first recess.

59. The insertion instrument assembly according to claim **58**, wherein the casing defines the second recess.

60. The insertion instrument assembly according to claim **59**, wherein when the coupling member moves to a location aligned with the second recess, the coupling member is driven out of the first recess and into the second recess, thereby translatably decoupling the attachment member and the plunger.

61. The insertion instrument assembly according to claim **60**, wherein the attachment member defines a channel, and the coupling member is configured to move across the channel so as to decouple from the plunger and couple to the casing.

62. The insertion instrument assembly as recited in claim **58**, wherein the casing carries an inner housing that carries the second recess.

63. The insertion instrument assembly as recited in claim **62**, wherein when the coupling member moves to a location aligned with the second recess, the coupling member is driven out of the first recess and into the second recess, thereby translatably decoupling the attachment member and the plunger.

64. The insertion instrument assembly as recited in claim **63**, wherein the coupling member comprises a leaf spring that is attached to the attachment member.

65. The insertion instrument assembly as recited in claim **63**, wherein the leaf spring is integral with the attachment member.

66. The insertion instrument assembly according to claim **1**, further comprising a depth stop that extends out from the cannula.

67. The insertion instrument assembly according to claim **1**, further configured to retain at least one end of a tensioning member that is coupled to the respective actuation members.

68. The insertion instrument assembly according to claim **67**, wherein the tensioning member comprises a tensioning strand having first and second ends, and the insertion instrument assembly is configured to retain the first and second ends.

69. The insertion instrument assembly accordingly to claim **68**, configured to selectively release one of the first and second ends.

70. The insertion instrument assembly accordingly to claim **69**, further comprising a retention assembly that is movable with the first pusher member, and proximal movement of the insertion instrument assembly after the first anchor body has been ejected causes the tensile force to be applied to the respective actuation member of the second anchor.

71. The insertion instrument assembly accordingly to claim **70**, wherein the retention assembly is movable with the first pusher member, such that proximal movement of the first pusher member after the first anchor body has been ejected causes the first tensile force to be applied to the respective actuation member of the first anchor, and

the first pusher member is configured to be depressed in the elongate opening so as to eject the second anchor body from the cannula, such that when a second tensile force is applied to the respective actuation member of the second anchor, the second anchor body expands, wherein the retention assembly is movable with the first pusher member, such that proximal movement of the first pusher member after the second anchor body has been ejected causes the second tensile force to be applied to the respective actuation member of the second anchor.

72. The insertion instrument assembly as recited in claim **69**, further comprising a tapered inner surface that defines a tapered bore, and a first locking member having a cross-sectional dimension less than a cross-sectional dimension of a first end of the tapered bore and greater than a cross-sectional dimension of a second end of the tapered bore, wherein the first locking member is configured to releasably retain at least one of the first and second ends of the tensioning strand between the locking member and the tapered surface.

73. The insertion instrument assembly according to claim **72**, further comprising a second locking member that is configured to attach to the second end of the tensioning strand.

74. The insertion instrument assembly according to claim **73**, wherein the plunger is translatably fixed to the first pusher member, wherein the plunger is configured to depress the first pusher member in the elongate opening.

75. The insertion instrument assembly according to claim **74**, further comprising a release member in communication with the first locking member, wherein movement of the release member biases the first locking member out to release the tensioning strand.

76. The insertion instrument assembly according to claim **75**, wherein the release member pushes the first locking member toward the first end of the tapered bore so as to create a gap between the first locking member and the tapered inner surface.

77. The insertion instrument assembly according to claim **73**, wherein the second locking member is threadedly attached at a location adjacent the tapered inner surface.

78. The insertion instrument assembly according to claim **77**, wherein the second locking member is aligned with the tapered bore, such that the second end of the tensioning strand extends through the tapered bore and is attached to the second locking member.

79. The insertion instrument assembly according to claim **69**, further comprising a retention assembly including a first locking body configured to releasably retain the first end of the tensioning strand, and a second locking body configured to retain the second end of the tensioning strand.

80. The insertion instrument assembly according to claim **79**, further comprising an actuator operably coupled to the first locking body so as to release the first locking body from the first end of the tensioning strand.

81. The insertion instrument assembly according to claim **79**, wherein the actuator becomes operably coupled to the first locking body once the first and second anchor bodies have been ejected.

82. The insertion instrument assembly according to claim **69**, further comprising a cutting assembly having a cutting blade, the cutting assembly movable between a disengaged position whereby the cutting blade is spaced from the tensioning strand and an engaged position whereby the cutting blade severs the tensioning strand.

83. The insertion instrument assembly according to claim **82**, wherein the cutting assembly includes a longitudinally elongate shaft that is coupled to the cutting blade, and longitudinal translation of the shaft causes the cutting blade to sever the tensioning strand.

84. The insertion instrument assembly according to claim **83**, wherein the cutting assembly further includes a switch pivotally coupled between both the elongate shaft and the cutting blade.

85. The insertion instrument assembly according to claim **82**, wherein the cutting assembly includes an actuator that is elongate along a direction angularly offset with respect to the cannula, and movement of the actuator along the direction angularly offset with respect to the cannula severs the tensioning strand.

86. The insertion instrument assembly according to claim **1**, wherein the first anchor body defines a first plurality of openings spaced apart with respect to each other along the respective direction of elongation of the first anchor body, the respective actuation member of the first anchor extends through at least three of the first plurality of openings of the first anchor body, such that the respective actuation member of the first anchor is configured to apply the tensile force to the first anchor body so as to expand the first anchor body.

87. The insertion instrument assembly according to claim **86**, wherein the second anchor body defines a second plurality of openings spaced apart with respect to each other along the respective direction of elongation of the second anchor body, the respective actuation member of the second anchor extends through at least three of the second plurality of openings of the second anchor body, such that the respective actuation member of the second anchor is configured to apply the tensile force to the second anchor body so as to expand the second anchor body.

88. The insertion instrument assembly according to claim **1**, wherein the second pusher member defines a cannulation that extends along the distal direction, wherein the first pusher member is insertable into the cannulation of the second pusher member.

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